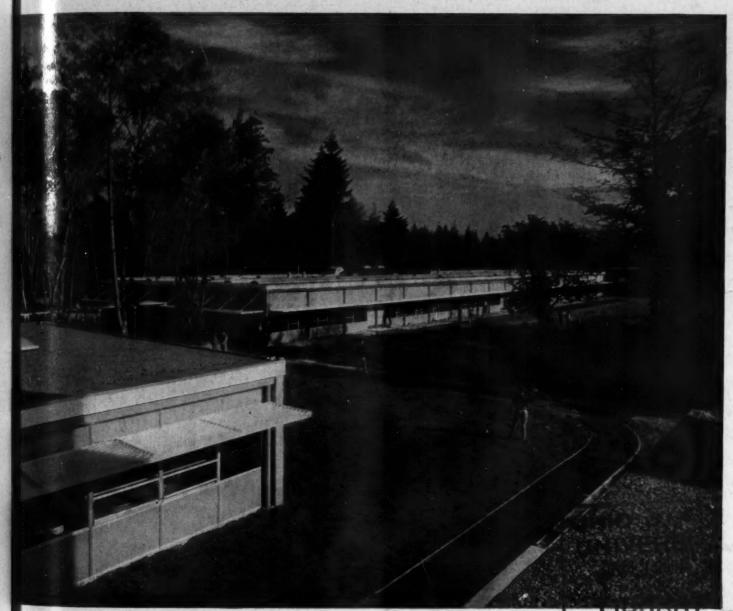
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NUMBER

216



NOVEMBER 1954



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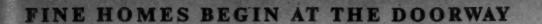




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ARCHITECTURAL RECORD (Vol. 116, No. 5, November, 1954) is published monthly by F. W. Dodge Corporation, 10 Ferry Street, Concord, N. H., with editorial (Regular Edition) and executive offices at 119 W. 40th St., New York 18, N. Y. \$5.50 per year, Foreign, \$20.00.



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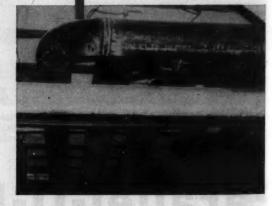
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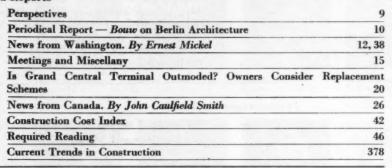
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Subscription rates in U. S., U. S. Possessions, and Canada: \$5.50 for one year, \$9.00 for two years, \$11.00/for three years. Elsewhere, subscriptions from those who by title are architects or engineers, \$6.50 for one year, \$11.50 for two years, \$15.00 for three years; subscriptions from all others outside U. S., U. S. Possessions and Canada, \$20.00 a year. Single copy price, \$2.00. Circulation Manager: Marshall T. Ginn. Change of Address: Subscribers are requested to furnish both old and new addresses, sending if possible the stencil impression from magazine wrapper. Allow four weeks for change.



JOHN KNOX SHEAR APPOINTED EDITOR-IN-CHIEF

EFFECTIVE now, John Knox Shear, A.I.A., presently Head of the Department of Architecture at Carnegie Institute of Technology, becomes Editor-in-Chief of Architectural Record. Other members of the Record's staff continue in their present posts.

Mr. Shear received his degree of Master of Architecture at the school which he has headed since 1949. He held graduate fellowships for two years at Princeton University where he won his Master of Fine Arts in Architecture.

At various times between 1939 and 1949, Mr. Shear was associated as an architect with C. B. Kearfott of Bristol, Va., Sherley W. Morgan, Martin Beck, Charles and Edward Stotz of Pittsburgh, and also with Marlier and Johnstone of Pittsburgh.

Since 1949 he has engaged in practice in the Pittsburgh area as a principal with Joseph Spagnuolo and Robert Taylor as associates.

RECORD'S Editor-in-Chief is known in architectural circles through his identification with A.I.A. activities and in educational circles through participation in the work of the Collegiate Schools of Architecture.

He has been introduced to the audience of Architectural Record as author of a significant series of articles on architectural education.

John Knox Shear, in his new capacity, will lead a strong and seasoned editorial staff characterized by a talent for teamwork.

- H. Judd Payne



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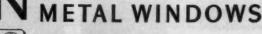
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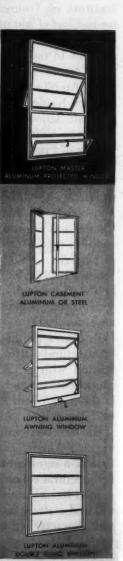
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A PREVIEW OF
FUTURE CONSTRUCTION
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SOME STORY ALLUSITARY CHAPTER X OF A SERIAL STORY

THE THE AR 1955

By Thomas S. Halden, Vice Chairman, with the collaboration of Clyde Shute, Assistant Vice President and Manager, Statistical and Research Division, and George Cline Smith

POSTWAR EXPANSION: CHAPTER TEN OF A SERIAL STORY

"Ole Man Construction, He Jes' Keeps Rollin' Along"

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THOMAS S. HOLDEN, Vice Chairman; with the collaboration of CLYDE SHUTE, Assistant Vice President and Manager,
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NOVEMBER 1954

POSTWAR EXPANSION: CHAPTER X OF A SERIAL STORY

"Ole Man Construction, He Jes' Keeps Rollin' Along"

By Thomas S. Holden, Vice Chairman; with the collaboration of Clyde Shute, Assistant Vice President and Manager, Statistical and Research Division, and George Cline Smith, Assistant Vice President and Economist, F. W. Dodge Corporation

SYNOPSIS OF PREVIOUS INSTALLMENTS

This is a story of practically continuous construction progress in the United States. Starting with a moderate upturn in 1945, last year of World War II, building and engineering contract volume has increased significantly every single year. Slowdowns in the overall rate of contract-letting have been of quite brief duration; they were caused in part by the necessity of market adjustments in the inflation period, in part by restrictive regulations immediately after World War II and during the Korean War.

Significant to the development of the present situation in the general economy and the present state of construction demand have been the following facts:

- 1. The wartime build-up of deferred construction demands was accompanied by a tremendous increase in productivity of factories, farms, forests and mines.
- 2. War production was accompanied by full employment, record earnings of the whole population, and record savings; in spite of shortages of consumer durables, there was a marked rise in living standards during the war years.
- 3. Along with vastly increased productivity, American industry acquired a new flexibility making for quick adaptations to rapidly changing circumstances; conversions and reconversions of industry came to be accomplished in minimum time.
- 4. Deferment of marriages in wartime, followed by a system of postwar benefits to veterans which in effect acted as marriage subsidies, led to a record number of marriages in 1946, followed by a record number of births in 1947, and a new upsurge of population growth which has persisted up to the

present time; population-wise this country has been achieving the equivalent of annexation of a Dominion of Canada once in every five years.

- 5. There took place a swing from a construction market dominated by wartime deferments to a market dominated by a succession of backlog demands created by the rapid expansion of the economy; since our upsurge in population growth was accompanied, as always in the past, by national output increasing faster than the number of consumers was increasing, the nation's economy was back to normal.
- 6. Built-in insurance against a number of previously experienced instabilities has enabled the economy to minimize many of the hazards that had proved very costly in the past: viz., unemployment insurance, pensions, insurance of bank and savings deposits, mortgage insurance and the spread of the system of amortization of mortgage debt, provisions against excessive speculation. The nation's financial system appears to have grown up to the nation's current and future needs, and inflation has, for the time being at least, been brought under control.
- 7. The amazing diversification of goods and services produced in this economy, and the accompanying diversification of goods and services demanded by consumers, industry and agriculture, tend to reduce the impact on the whole economy of necessary readjustments in particular sectors. Growing awareness of the intimacy of interrelationships among the diverse activities of the economy has been accompanied by a keen awareness that progress is being made simultaneously on many fronts.
- 8. Recent large dollar volumes of new construction have not constituted a boom. They have included few, if any, speculative projects. During the

years 1951-1953 inclusive, estimated total new construction expenditures have averaged about nine and a half per cent of gross national product; this is to be compared with an average of 15½ per cent of gross national product during the years 1927-1929, when there really was a construction boom. Mounting construction volumes have thus far produced no significant surpluses of any important class of structural facilities.

 Continued growth of the nation's inventory of building and engineering structures automatically increases the potential market for alterations, maintenance, modernization and repairs.

10. A groundwork has been laid for further expansion of construction activities to larger volumes than any thus far attained, barring major war or other catastrophe; uniform speed of construction progress from year to year obviously cannot be guaranteed.

THE YEAR 1954

To that faithful little band of happy worriers—professional, semi-pro, and amateur—who confidently expected depression in 1954, the year just closing must have been very disappointing.

To be sure, there was a continued readjustment in certain areas of the farm economy, there were slowdowns in steel and motor vehicle production and some other branches of industry, and competition became very keen in various sectors. In March 1954 the Federal Reserve Board adjusted index of industrial production had declined to 123, a decrease of 10 per cent from the July 1953 peak of 137. Unemployment reached an estimated 3,725,000 persons, not quite six per cent of the civilian labor force; it has since declined substantially.

But wholesale prices and living costs remained practically stable, while total disposable personal income and total consumption expenditures rose by moderate amounts. The total output of goods and services (gross national product) was less than three per cent below the record figure of all time, which was achieved in 1953. The year 1954 has been, on the whole, the second best in the country's economic history.

Construction activity provided the biggest surprise of the year. Instead of dropping off moderately, as was quite generally expected, contract volume rose steadily throughout the year and rolled up a total exceeding all previous records. The 37 states dollar total for building and engineering contracts let during the 12 calendar months of the year will likely run 10 per cent ahead of the 1953 figure, whereas F. W. Dodge Corporation's estimate published in November 1953 was for a three per cent decline.

In the nonresidential building classifications, the following are running ahead of estimates in total new floor space contracted for: manufacturing buildings (there was a drop, but less than estimated), educational and science buildings, hospitals and institutional buildings, public buildings, and religious buildings. Commercial building volume has increased, but by less than the anticipated amount. Social and recreational projects are about even with 1953; miscellaneous nonresidential projects are a little behind. Nonresidential building as a whole will probably run five per cent ahead of 1953 in new floor space contracted for, against a previously estimated one per cent increase.

The biggest surprise in construction this year was housing activity. At the year's beginning practically every one expected a 10 per cent drop in new nonfarm dwelling units from the 1953 figure, instead of which the year's end will probably show a nine per cent increase. Instead of the expected 1,000,000 units there will be very close to 1,200,000. The Dodge residential building contract figures, which are rather heavily weighted with units in the higher price ranges, will show an even higher percentage increase.

None of the earlier 1954 estimates appears to have fully appraised the potential demand for larger and better houses that has grown up among the growing and prospering families of the nation. The immediate postwar demand was for minimum houses, mostly with two bedrooms and one bath. In 1954 new houses of this minimum type were in reduced demand; they even came to be regarded by lenders as poor mortgage risks. Instead, the big and growing demand was for three bedroom houses, many of them with two bathrooms. The trend was also toward houses of better architectural and structural quality.

The liberalized credit terms made available under the Housing Act of 1954 recognized this potential demand, and resulted in a rising trend of mortgageinsurance applications in the third quarter of the year. Special provision was made in the Act for facilitating the ready sale of existing houses and ready acquisition of larger new ones.

For public works and utilities contracts, the estimates of 12 months ago pointed to an over-all dollar volume increase of seven per cent over 1953. Actually the 1954 volume may run slightly under that of the preceding year. This class of activity lagged a bit during the early months of the current year. Contracts for highways, bridges, and airport ground facilities ran substantially ahead but most other heavy construction categories failed to keep pace with the 1953 record.

The conservative estimates of 1954 construction volume that were made 12 months ago presupposed for 1954 a minor construction slowdown in conformity with the slowdowns in industrial production and general business activity which were then expected and which actually came about. In actual fact, potential construction demands were so strong and financing so readily available that attitudes of potential construction investors appear to have been very little affected either by actual business slowdowns that were taking place or by depression propaganda that was being spread about.

The year 1954 was one of wholesome construction progress.

POTENTIAL DEMAND FACTORS, 1955

Potential demand factors for new construction are approximately what they were a year ago. Since the country's population has increased by some 2,700,000 persons during the preceding 12 months, there has been little diminution in the intensity of demand for important classes of building and engineering projects.

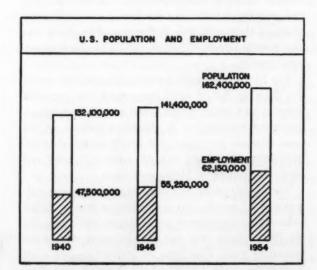
In at least two areas of huge backlogs of needs, there has been definite intensification of demand. As everybody knows, these are schools and highways. These two situations are worth reviewing at this point.

It was recently stated by Wayne Reed, Assistant Commissioner, United States Office of Education, that although this year's record volume of school building activity is producing an estimated 55,000 new classrooms, a total of 720,000 additional rooms

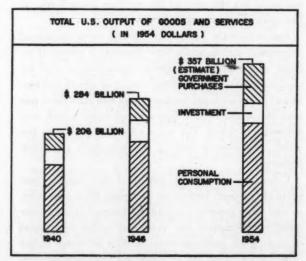
will be needed by September 1959, in order to catch up with the nation's requirements by that date. In short, we must considerably more than double the current rate of school building. Mr. Reed's estimate of needs was based on an anticipated enrollment increase of 6.7 million between September 1954 and September 1959, and included the following items: backlog needs, 370,000 classrooms; normal replacements, 100,000 classrooms; enrollment increase requirements, 250,000 classrooms. The construction cost of such an expansion might run to four and a half or five billion dollars a year, at current prices.

With regard to highways, existence of a huge backlog of needs is generally admitted. President Eisenhower has appointed a special committee to survey the highway situation and make an early report on facts and recommended programs. A preliminary estimate of needs, based on reports from highway departments of the 48 states, indicates a necessary program of at least \$5,000,000,000 a year for 10 years; the committee's report may indicate that an even bigger program is called for. The survey is to cover the nation's needs for throughways and parkways, main traffic arteries, secondary and access roads and city streets. The reason for the nation's huge highway needs is readily apparent when it is noted that the nation's total motor vehicle registration will have increased from 31,000,000 on January 1, 1945 to an estimated 58,100,000 by the end of 1954.

Net population increase and continued movement of population to suburban areas bring about continuing demands for new retail shopping centers;



In 1954 an estimated 38.2 per cent of total population was employed: this compares with 38.8 per cent in 1953 (not shown in the chart), 39.1 per cent in 1946, and 35.9 per cent in 1940



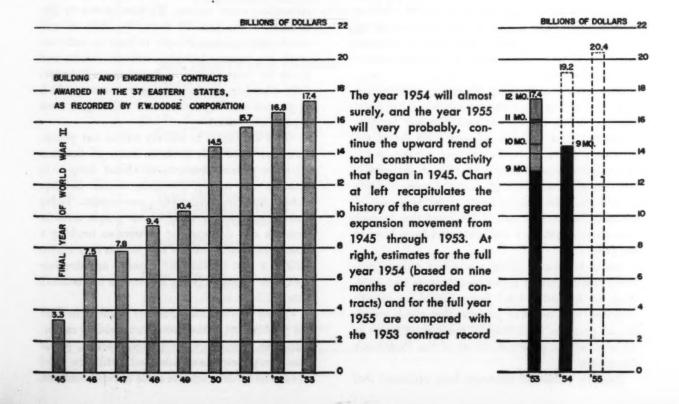
Total 1954 output (gross national product) dropped about 3 per cent from the 1953 peak, but attained the second highest figure on record

the resulting competition of the new outlying centers is stimulating improvements in downtown shopping areas, with many new store buildings and many store modernizations. Office building projects are considerable and are gradually increasing in number, many of them being financed as direct investments by life insurance companies. New highway developments will stimulate building of garages and service stations, roadside restaurants and stores. Commercial building generally is due for steady increase. Along with the millions of new homes and the thousands of new schools come demands for new churches, parish houses, hospitals, community houses, and recreation facilities, as well as enlarged water supply, sewerage and gas and electric utilities. These prospective private and public community facilities are at the moment of less urgency than are the schools and highways. Their expansion is apt to come about in a gradual, orderly way; they do not seem likely under present conditions to be pushed ahead faster than the needs require and therefore do not seem likely to develop overbuilt

The one important class of operations that could conceivably run ahead of its actual market potential is, of course, housing. This possibility is inherent in the competitive production of any commodity to be sold in the market; a very large majority of housing units being produced currently are single-family

houses built by merchant builders. Also, the fact that the current housing market has gone definitely beyond the supplying of basic shelter and into a program to meet demands for improved standards of family living furnishes another reason why this class of operations may be subject to more ups and downs in the next few years than others. Postwar experience, however, has shown that the housebuilding industry has acquired a very considerable facility for adapting itself quickly to changing market conditions.

Lagging behind most other classes of building and engineering projects is industrial building. New industrial floor space contracted for has been on a downtrend since 1951. It may possibly continue downward for a while longer. Yet with the number of the nation's consumers increasing at the rate of 2,700,000 persons a year, with a continuing national urge to raise the levels of per capita consumption, and with the everlasting need for modern plants to reduce production costs and new plant locations to reduce distribution costs, revival of industrial building must surely come along at a fairly early date, though possibly not in 1955. Furthermore, industrial corporations are showing a definite tendency to plan their expansion programs on the basis of long-range studies of market potentials rather than on opportunistic decisions based on current business condi-



Finally, there does not appear on the horizon any indication that shortage of investment funds will handicap legitimate expansion of private projects of all kinds. Local governments, which we look to for financing schools and other public facilities, are fully aware of their opportunities to increase taxes as Federal taxes are reduced.

ESTIMATES FOR 1955

It is obvious from all the foregoing considerations that the nation's 1955 construction program will most likely be a simple continuation of the program of 1954. It will likely be another year of overall construction volume increase. Since 1954 activity was already at a very high level, we who have prepared these estimates have set down figures representing for the most part moderate increases over 1954—a six per cent dollar volume increase for total building and engineering contracts in the 37 eastern states and a five per cent increase in total new residential and nonresidential building floor space.

The estimate tables show the following indications for nonresidential building classifications; a sizeable increase in educational buildings; moderate increases in commercial buildings, hospitals and institutions, public buildings, religious buildings, and social and recreational projects; miscellaneous nonresidential building (which includes among other things, railway, bus and air terminals) is estimated at the same figure as that of the year 1954; for manufacturing buildings there is estimated a further moderate floor space decline (this estimate being based principally on the apparent lack of any evidence as to when the confidently expected upturn may come about).

For residential building there is estimated an approximate four per cent increase in new non-farm dwelling units, a five per cent increase in non-residential floor space to be contracted for in the 37 eastern states, and a six per cent increase in 37-states dollar volume. Nearly all of such increase as will take place will be single-family houses. It seems possible that the indicated rate of increase may be exceeded in the first half of 1955 and that in such case there might be a moderate slowdown later in the year.

Dollar volume of public works and utilities contracts is slated for an 11 per cent increase over 1954. Such an expanded total figure would be heavily weighted with highway projects, for which an enlarged program is already in the making, even in advance of the expected survey of the President's Committee.

Recently published estimates have indicated that

alterations, repairs and modernization of existing structures throughout the country may have amounted to as much as a billion dollars a month in 1954. There is every reason to expect as large an actual volume in 1955 as there has been during the current year.

The conservative estimates here shown for new construction likely to be undertaken in 1955, if approximately realized, would represent only a small fraction of the nation's potential long-range construction market. They presuppose a continuation of some rather important general business adjustments which were in progress but not completed in 1954.

In short, the next chapter of this serial story will carry forward the progress record of the American economy. As presently conceived it will not likely be a story of dramatic surprises. But it will contain that highly important element so essential to a good serial, the element of suspense. The suspense build-up consists in the cumulative growth of construction demand pressures resulting from fast-increasing population, expanding technology and the everlasting urge of the American people to improve their living standards and to build a great civilization. At some stage these pressures will result in construction activities of far broader scope than is here envisioned for the coming year.

As President Eisenhower stated in his address to the nation on October 26:

"Our population grows at a rate of five new Americans every minute. We have grown by 20,000,000 in the past 10 years, by 1970 we will number 200 million. Simply to keep up with our needs for homes, factories, schools, roads, and goods for these additional Americans will powerfully stimulate expansion of our economy. And, to provide us a higher standard of living, it must expand even more.

"This expansion is entirely within our power. Doubters need only look at some of the new frontiers science opens to us almost daily—in plastics, new metals, peacetime atomic developments, antibiotics, television, aeronautics. Today more than twice as many of our people work in research and development as were so working a dozen years ago. America now invests four billion dollars a year in scientific research and development. No money is better invested in our nation's future.

"In my own lifetime, from my boyhood in Kansas to this day, I have seen automobiles, radio, television, telephones, electricity, tractors, power machinery, new insecticides and fertilizers, good roads and modern schools come to rural America.

TABLE 1: ESTIMATED PHYSICAL VOLUME OF BUILDING

(in accordance with contract records for 37 eastern states; figures in millions of sq ft)

BUILDING CLASSIFICATION	YEAR 1954 ESTIMATE *	YEAR 1935 ESTIMATE	PERCENTAGE CHANGE †
Commercial	. 128	132	+ 3
Manufacturing	. 100	95	_ 5
Educational and Science	. 152	170	+12
Hospitals and Institutions		29	+ 7
Public		16	+ 7 + 7
Religious		37	+ 9
Social and Recreational	. 17	18	+ 6
Miscellaneous Nonresidential		42	0
Total Nonresidential	. 515	539	+ 5
Residential		890	+ 5
Total Building		1429	+ 5

TABLE 2: ESTIMATED NUMBER OF NEW DWELLING UNIT STARTS

(in thousands)

	YEAR 1954 ESTIMATE*	YEAR 1955 ESTIMATE	PERCENTAGE CHANGE †
Dodge coverage basis	. 658	685	+ 4
BLS coverage basis	. 1200	1250	+ 4

TABLE 3: ESTIMATED DOLLAR VOLUMES OF BUILDING AND ENGINEERING PROJECTS

(in accordance with contract records for 37 eastern states; figures in millions of dollars)

CLASSIFICATION	YEAR 1954 ESTIMATE*	YEAR 1955 ESTIMATE	PERCENTAGE CHANGE †
TOTAL PRIVATE & PUBLIC OWNERSHI	P		
Nonresidential	. 8300 . 15,225 . 3945	7250 8800 16,050 4360 20,410	+ 5 + 6 + 5 +11 + 6
PRIVATE OWNERSHIP			
Nonresidential	. 8040 .12,300 . 510	4325 8525 12,850 560 13,410	+ 2 + 6 + 4 +10 + 5
Nonresidential	. 260 . 2925 . 3435	2925 275 3200 3800 7000	+10 + 6 + 9 +11 +10

^{*}Nine months actual, last three months estimated.

[†]Percentages rounded to nearest whole numbe

If in this time so much could be done, I know that America's tomorrow will be still more exciting, still more productive, filled with more and better things for all of our people."

Even with this glowing future prospect, it seems self-evident that a gradual year-by-year expansion, such as has been in progress since 1945, provides a sounder potential development of the construction market than would a program of sudden huge increases quite possibly followed by market-correcting slowdowns.

No serial story goes on forever but this one seems to be set for quite a few exciting chapters yet to be written. On a bigger scale than ever before, the United States of America is a going concern and a growing concern. And Ole Man Construction, he jes' keeps rollin' along.

MOST LEADING ECONOMISTS PREDICT MODERATE UPTURN

Composite Opinion of 186 Leading Economists

Polled by F. W. Dodge Corporation in October 1954

SUMMARY PREPARED BY GEORGE CLINE SMITH, DODGE ECONOMIST

MODERATE IMPROVEMENT in business activity is the consensus of reports on the 1954-55 outlook by 186 of the nation's top economists polled by F. W. Dodge Corporation in its annual opinion survey. More than three fourths of the economists replying expect total activity, measured by gross national product, to be higher than the current rate in each quarter of 1955; and in general they expect the trend during 1955 to show a steady rise until the end of the year.

However, the prevailing opinion is moderate, with the median forecast for the end of 1955 showing only a two per cent increase over the level prevailing in the second quarter of 1954, and slightly below the average for 1953, the highest year on record. This forecast could be interpreted as meaning virtual stability, since the rise indicated is so slight; yet an underlying element of strength appears in the fact that three out of four economists do expect a steady, if gradual, increase. (It should be noted that in last year's poll, the majority predicted a mild decline in 1954, which was borne out by events.)

Consistent with this view of gradual increase in total output, the majority also indicate a small rise in the Federal Reserve Board's index of industrial production and in consumer spending. These forecasts also mark a reversal of the expectations recorded in last year's poll.

The economists participating in the survey include 37 in financial organizations and insurance companies, 57 from other business firms, 46 from colleges and universities, and seven from government; the remaining 39 are consultants or members of research organizations.

Two non-economic factors occupied a position of some importance in the basic assumptions underlying the forecasts, according to comments made by many of the respondents. These two factors were the international situation and the political situation.

So far as could be determined from the comments, none of the group assumed that all-out war was in prospect, or that defense expenditures would be greatly increased or decreased during the coming year. Many comments, however, referred to the possibility of changes in defense outlays.

Several comments called attention to the possible effects of the November election. It is impossible to draw any conclusions as to prevailing opinion from these comments, but they do serve to indicate that many respondents considered the political situation as one of the "unknowns" involved in current economic forecasting.

GENERAL COMMENTS

Comments on specific questions are included with the discussion of those questions below. A large number of respondents commented on the business outlook in general, and the following quotations are typical of the range of views expressed:

Present indications are that economic activity will be on the rise next year but at a rate below normal. This indicates an increasing portion of our productive capacity may be idle,

and therefore, business and government must accept special responsibility for bringing about more rapid expansion of market activity. For business this means stepped-up efforts to secure larger markets. For government it means tax reduction to stimulate production and consumption.

Real question is not whether decline is over, but whether expansion will occur rapidly enough to avoid growth in unemployment. G.N.P. ought to rise by \$15 billion per year to achieve this. If so, where is the upward push to come from?

I feel that the readjustment to levels more closely approximating peacetime will continue. This means substantial changes in many individual industries but relatively little change in aggregates.

Expect at least 18 months of reasonable stability.

Balance of 1954 and 1955 should continue to enjoy the price stability that has prevailed since January 1951. Growth in the output of the economy should be resumed, and unemployment should drop below 3,000,000.

I look for a period of comparative economic stability, again assuming a "warful" peace. Even a divided Congress, which appears likely, will not act too quickly to reverse the economic atmosphere established by the Administration in the last two years. . . . Monetary and banking policy will continue the key factor in sustaining plant expenditures and the economy.

I think the efforts to bolster the economy by the type of inflation that has been used within the last year are producing an appearance of business revival without deep-seated improvement. Much will depend on a continuation of inflationary policies or their abandonment. . . . It is my opinion that military expenses or inflationary practices cannot for any considerable time continue to stimulate the civilian side of the economy.

The overpowering force is that of politics and its ramifications, including the ever-present threat of involvement in a major war. All this is, I feel, quite outside the province of economics. But with this as a modifying background, it appears that we shall have more or less continuous inflation.

In my opinion 1955 will be a year of sustained, but not greatly improving, economic activity. Activities (in the absence of war) will continue to be sustained by government spending at all levels, a high level of consumption, and reasonable strength in the construction industries.

As I see it, most business trends will be gradually upward, but not in striking amounts for the remainder of 1954 and for 1955. This will be due to these factors predominantly:

1. minor tax reductions; 2. slightly lower savings rate (personal); 3. inventories are fairly well worked off; 4. some wage increases; 5. small increases in military orders; 6. continued population growth at rapid rate; 7. new household formations at about 850,000-900,000.

DETAILS OF REPLIES

The economists surveyed were asked to present specific forecasts for the remainder of 1954 and for 1955 for 11 major economic indicators. A total of 186 economists replied, but a few omitted replies to parts of some questions. However, the minimum number of replies to any part of any question was 168 (on new housing starts for the first half of 1955); replies ranged up to a maximum of 183 on three questions.

1. GROSS NATIONAL PRODUCT

Total output of goods and services is expected by a majority of the economists to rise steadily, but not greatly, through the remainder of 1954 and all of 1955. The median estimate for the full year 1954 is \$356.1 billion; the median estimate for 1955 is \$361.4 billion, an increase of a little over one per cent in 1955 over 1954. While this indicates an expectation of virtual stability it is interesting to note that the tone is optimistic, since the median quarterly forecasts expect a steady increase from the low point in the first quarter of 1954 (annual rate \$355.8 billion) through the fourth quarter of 1955 (annual rate \$363.2 billion), an increase of about two per cent.

COMMENTS: "Country larger but will operate at a little lower per cent of capacity." / "These observations reflect basic growth factors in the economy as offsets to competitive elements which might otherwise produce a moderate decline in business." / "The potential continues to be enormous."

2. COST OF LIVING

The median expectation of the economists responding is that prices as measured by the BLS consumer price index will remain steady throughout 1955. The median forecast for the end of 1955 is 115.2 on the index, exactly where it stood in July of 1954. It should be pointed out that relatively few economists individually predicted such exact stability; the majority forecast a rise or fall of one half or one point in the index, with approximately equal numbers on both sides. This range is so small that it amounts virtually to stability; and 128 of the economists felt that at the end of 1955 the index would be between 114 and 116 inclusive, a rise or fall of about one per cent.

COMMENTS: "Balance of 1954 and 1955 should continue to enjoy the price stability that has prevailed since January 1951." / "Prices are likely to remain fairly stable." / Relative stability in prices is expected."

3. WHOLESALE PRICES

The picture with respect to wholesale prices is similar to that for consumer prices. The median expectation of the economists' panel is that in December of next year the BLS wholesale price index

will stand at 110.3, very close to the average level so far in 1954. Again those expecting slight increases or declines were about equally balanced. A total of 99 predicted that the index at the end of next year would be between 109 and 111 inclusive, a range of about one per cent above or below the current figure, which is fluctuating close to 110.

COMMENTS: See "Cost of Living" above.

4. HOURLY WAGES

The economists were asked to state whether they thought the trend of hourly wages would be up or down in durable, nondurable and building construction industries. The vast majority predicted an upward trend for all three industries, as follows: Durable—up, 132; steady, 13; down, 35; no answer, six. Nondurable—up, 139; steady, 15; down, 27; no answer, five. Building—up, 129; steady, 18; down, 36; no answer, three.

COMMENTS: "Costs will rise due to increased hourly wage rates at a more rapid rate than increases in productivity. Competition in the lines I know about is keen. Nothing in sight to reduce edge. Consequently price trend will not rise." / "The changes indicated for average hourly wages and average weekly hours will be very slight and, of course, will tend to balance out in average weekly earnings." / "A continued inching up of wage rates is likely to sustain finished goods prices despite severely competitive conditions in many industries." / "Increase largely hidden."

5. WEEKLY HOURS

Again the respondents were asked to indicate expected trends in durable, nondurable and building construction industries. Here, however, the forecast showed no such pronounced upward trend. The forecasts for hours in the durable and nondurable industries were nearly equally divided between up and down, while a large majority expected hours in building to drop. The results were as follows: Durable—up, 84; steady, 21; down, 76; no answer, five. Nondurable—up, 81; steady, 26; down, 73; no answer, six. Building—up, 49; steady, 36; down, 91; no answer, 10.

COMMENTS: "I expect drive for shorter work week at same (40-hr) pay to intensify in second half of 1955. No significant change pending decision on above. / "35-hour week will be discussed." / "Very little increase in overtime in 1955. Trend will be 'up' but not a big 'up'."

6. INDUSTRIAL PRODUCTION

The economists on the panel in general predict a steady rise in the Federal Reserve Boards seasonally adjusted index of industrial production. During recent months the index has remained steady at about 124. The median expectation of the economists is for an index of 127.1 at the end of this year, 129.7 in the middle of 1955, and 130.9 at the end of 1955. This would be an increase of a little more than five per cent over the current rate. There was a high degree of unanimity as to the direction the index would take; 87 per cent of the economists felt that the trend would be upward.

COMMENTS: "Defense production would seem to be with us for the long pull at levels as high or higher than today." / "Activity will continue to be sustained by government spending." / "The automobile industry is not likely to have a better year in 1955 than in 1954." / (After citing several favorable factors) "Such a pattern of developments might not, however, result in attainment during this period of the earlier peak level of industrial production, since outlays for services are assumed to rise substantially from mid-1953 to the end of 1955. Manpower and industrial resources would be ample in this pattern."

7. PLANT AND EQUIPMENT EXPENDITURES

The economists in the survey took a moderately pessimistic view of the prospects for new plant and equipment expenditures. Such outlays totaled \$28.4 billion last year and are currently estimated at \$26.7 billion for 1954. The median expectation of the economists for next year is \$26.0 billion, a drop of somewhat less than three per cent below this year. Exactly three fourths of the panel predicted a drop below the 1954 level, and a substantial number of these (70) forecast outlays of \$25 billion or less next year.

COMMENTS: "Plant and equipment expenditures may be down about 10 per cent." / "Business will not pick up this fall because the rate of investment in plant and equipment will not be maintained during the last two quarters of this year. Furthermore, expectations for investment in plant and equipment in 1955 will prove disappointing." / "Industrial construction and equipment purchases may decline slightly from present high levels." / "I am somewhat disturbed, however, about the outlook for investment in new plant and equipment for 1955. There appears to be a falling off at the moment in inquiries looking to such borrowing for the first half of next year."

8. NEW CONSTRUCTION

The survey called for estimates of monthly outlays for new construction as measured by the U.S. Departments of Commerce and Labor. The economists on the panel were fairly well agreed on relative stability in construction outlays, with 137 forecasting a rate at the end of 1955 within seven per cent above or below the \$3.0 billion a month average for the first half of 1954. Most predicted a slight rise in the second half of 1954 (median \$3.1 billion a month) followed by a slight drop in the first half of next year (median \$3.0 billion a month) and a further slight drop in the second half of 1955

(median \$2.9 billion a month). This would mean a monthly rate at the end of 1955 about three per cent below the rate in the first half of 1954.

COMMENTS: "Construction, bolstered especially by public expenditures in highway, educational, and sewer and water construction, should remain about stable." / "Building must face the threat of cyclical decline before too long, I feel." / "The construction industry should be able once again to give a good account of itself."

9. NEW HOUSING STARTS

The economists generally expect a slight decline in the number of new non-farm housing units started next year. Such starts averaged 95,250 monthly during the first half of 1954. The median expectation of the panel is for a monthly average of 95,000 during the second half of 1954, 94,000 during the first half of 1955, and 92,000 during the second half of 1955. These estimates would give a total of 1,141,500 starts this year, and 1,116,000 next year, a drop of about two per cent.

COMMENTS: "More money to spend and trend toward home ownership is a factor in favor of residential construction." / "I do not anticipate that the lower loan requirements of the 1954 Housing Act will prove effective except in certain localities." / "Housing starts up perhaps 10 per cent or more due to new legislation and easier credit. A decrease seems to be out of the picture for 1955."

10. PERSONAL CONSUMPTION EXPENDITURES

In line with their expectations for increased gross national product and industrial output, the econ-

omists surveyed expect that personal consumption expenditures will rise slightly in 1955. This would be a continuation of the steady rise which has prevailed for many years, although at a much less rapid rate of increase. During the second quarter of 1954 personal consumption expenditures were at an annual rate of \$233.1 billion. The economists' median expectation is that this rate will average \$233.2 billion during the second half of this year, and that such expenditures will amount to \$234.3 billion in 1955. This increase of less than one per cent above the second quarter of 1954 is so small as to be classed as virtual stability; but a general feeling of strength was reflected in the fact that only a few of the economists (19) forecast a 1955 drop of more than \$3 billion, while a far larger number (42) predicted an increase of more than \$3 billion.

COMMENTS: "Very stable. Consumers still have vast reserves of liquid assets. Birth rate is still high, indicating great confidence in the future on the part of our young people." / "With pension plans, insurance and job security people will probably tend to spend more of current income." / "The consumption power of a growing population and new economic areas should provide sufficient forward momentum as offsets to a temporary catching-up of capital investment programs and conservative inventory policy." / "Demand for goods and services for nearly 2,750,000 new Americans is being generated annually." / "Though household formations will be down because of basic population factors the favorable financial position of the consumer, coupled with his good income outlook, and population growth, should just about take up this slack. Personal consumption expenditures should go ahead - with nondurable goods faring better than durables."

Participants in the survey, other than those who asked for anonymity, were:

William J. Abbott Jr., Federal Reserve Bank, St. Louis; Adolph G. Abramson, S.K.F. Industries, Inc.; Robert W. Adams, Standard Oil Co. (N. J.); Dr. Eugene E. Agger, Rutgers University; John T. Anderson, Armeo Steel Corp.; Dr. Robert S. Aries, R. S. Aries & Associates; Robert H. Armstrong, N. Y. C.; Henry Bradford Arthur, Swift & Co.; Harold E. Aul, Calvin Bullock; P. T. Babson, United Business Service; Robert W. Bailey, United Airlings Inc. Harol P. Barry, P. B United Airlines Inc.; Horace R. Barnes, Franklin & Marshall College; Dr. Louis H. Bean, Arlington, Va.; B. H. Beck-hart, Columbia University; Spurgeon Bell, N. Y. C.; Claude L. Benner, Continental American Life Insurance Co.; Richard Berger, General Aniline and Film Corp.; Frederick M. Bernfield, Washington, D. C.; George D. Bieber, Eastern Gas & Fuel Assn.; Leonard J. Bisbing, Bisbing Business Research; Charles A. Bliss, Harvard University; Edwin H. Boeckh, E. H. Boeckh & Assoc.; Chelcie C. Bosland, Brown University; R. Buford Brandis, U. S. Chamber of Commerce; Elmer C. Bratt, Lehigh University; Dr. Robert F. Bryan, J. H. Whitney & Co.; Dr. F. A. Buechel, Houston Chamber of Commerce; Dr. Joseph A. Buff, Siena College; Eugene Burlingame, Babson's Reports, Inc.; Irvin Bussing, Lowell, Smith & Evers, Inc.; Francis J. Calkins, Marquette University; Chester B. Camp, Indianapolis; W. Glenn Campbell, American Enterprise Assn.; William P. Carlin, Republic Steel Corp.; Cecil C. Carpenter, University of Kentucky; John J. Carter, Kingan Inc.; Francis R. Cella, University of Okla-homa; Homer V. Cherrington, Northwestern University; Ewan Clague, U. S. Department of Labor; Philip E. Coldwell, Federal Reserve Bank, Dallas.

George W. Coleman, Mercantile-Commerce Bank & Trust Co.; Gerhard Colm, National Planning Assn.; Dr. P. D. Converse, University of Illinois; Edison H. Cramer, Sterling, Va.; Earl F. Crouse, Doane Agricultural Services, Inc.; Dr. William W. Cum-berland, Ladenburg, Thalmann and Co.

Henry M. Cunningham, Washington, D. C.; Dudley J. Cowden, University of North Carolina; Ernst A. Dauer, Household Finance Corp.; D. H Davenport, N. Y. State Department of Commerce; Wendell M. Dennis, Singmaster & Breyer; Frederick A. Dewey, N. Y. C.; Charles A. Dice, Ohio State University; Leonard A. Drake, Cham-ber of Commerce of Greater Philadelphia; Henry P. Dutton, Hendersonville, N. C.; James S. Earley, University of Wisconsin; Stahrl Edmunds, Booz, Allen & Hamilton; R. J. Eggert, Ford Motor Co.; Nathanael H. Engle, University of Washington; B. E. Estes Jr., U. S. Steel Corp.; Lloyd M. Faust, Com-merce Trust Co.; Robert Ferber, Uni-versity of Illinois; Leo Fishman, Uni-versity of West Virginia; Morris D. Forkosch, Brooklyn Law School.

Harold G. Fraine, University of Wis-consin; Dr. John D. Gaffey, Pasadena; Martin R. Gainsbrugh, National Industrial Conference Board; Roy L. Garis, University of Southern California; University of Southern California; Edwin B. George, Dun & Bradstreet; Charles A. Glover, American Tele-

phone & Telegraph Co.

Richard J. Gonzalez, Humble Oil & Refining Co.; William L. Gregory, Easton-Taylor Trust Co.; K. F. Griffith, Eli Lilly & Co.; John A. Griswold, Tuck School of Business Administration; Clarence H. Haines, Harvard Trust Co.; Louis F. Hampel, United Air Lines, Inc.; Albert Haring, Indiana University; Dr. F. A. Harper, Foundation for Economic Education, Inc.; William W. Heusner, Pabst Brewing Co.; Walter E. Hoadley Jr., Armstrong Cork Co.; Werner Hochwald, Washington University; Walter M. Hollowell, University; Walter M. Hollowell, Lowry Air Force Base; Floyd J. Hosking, Corn Industries Research Foundation; Louis S. Hough, University of Toledo; Joseph B. Hubbard, Union Service Corp.; James F. Hughes, Auchineloss, Parker & Redpath.

Kermit C. Jeffrey, California & Hawaiian Sugar Refining Corp., Ltd.; Norris O. Johnson, National City Bank of N. Y.; Robert E. Johnson, Western Electric Co., Inc.; Robert W. Johnson, Carborundum Co.; Flavius B. Jones, Equitable Gas Co.; Homer Jones, Fed-

eral Reserve Board.

James A. Julian, Evansville (Ind.) College; Dr. Vant W. Kebker, Ohio Wesleyan University; Lester E. Keller, Bausch & Lomb Optical Co.; Donald L. Kemmerer, University of Illinois; Fred O. Kiel, Federal Reserve Bank of Cleveland; Dr. Hugh B. Killough, Brown University; Edmund R. King, Eastman Kodak Co.; Thomas Kinsella, Allied Chemical & Dye Corp.; Oswald W. Knauth, N. Y. C.; Byron J. Korb, Koppers Co., Inc.; Dr. H. E. Kromayer, American Maize Products Co.; Harold D. Kube, Jansky & Bailey, Inc.; Francis A. Kutish, Iowa State College; Richard O. Lang, S. C. Johnson & Son, Inc.; John F. Lebor, Federated Department Stores; W. Gordon Leith, Consumers Co-operative Assn.; Robert E. Lewis, National City Bank of N. Y.; Walter Lichtenstein, Cambridge, Mass.

Oscar F. Litterer, Federal Reserve Bank of Minneapolis; Shaw Liver-more, Rockefeller Bros.; H. D. Locke, Liberty Mutual Insurance Co.; John M. Lockhart, Kroger Co.; Gordon M. Looney, Libbey-Owens-Ford Glass Co.; Benjamin F. Lynip Jr., California & Hawaiian Sugar Refining Corp., Ltd.;

Sherman J. Maisel, University of Cali-Sherman J. Maisel, University of California; M. J. Mandeville, University of Illinois; Marion H. Marks, Crown Zellerbach Corp.; Stewart M. Marshall, Palo Alto; R. Matthes, Owens-Corning Fiberglas Corp.; Dr. Paul W. McCracken, University of Michigan; Gordon W. McKinley, Prudential Insurance Co. of America; Wayne L. McMillen, American Airlines Inc.; David C. Melnicoff, Penn Fruit Co.; Rodger I. Mendes, Pacific Cas & Electric Co. Meinicoff, Penn Fruit Co.; Rodger I.
Mendes, Pacific Gas & Electric Co.;
Edmund A. Mennis, Wellington Co.,
Philadelphia; Oswald E. D. Merkt,
Kidder, Peabody & Co.; Dwight
Michener, The Chase National Bank;
Henri L. Micoleau, General Motors Corp

K. E. Miller, Armour & Co.; Walter litchell Jr., Old Greenwich, Conn.; K. E. Miller, Armour & Co.; Walter Mitchell Jr., Old Greenwich, Conn.; Dr. Floyd W. Moore, Western Michigan College; Dr. Fred W. Moyer, B. F. Goodrich Rubber Co.; Ragnar D. Naess, Naess & Thomas; Robert R. Nathan, Robert R. Nathan Assocs., Inc.; Philip Neff, University of California at Los Angeles; Dr. M. R. Neifeld, Beneficial Management Corp.

A. J. Nesti, National Electrical Mfrs. Assn.: Dr. Robinson Newcomb. Wash-

Assn.; Dr. Robinson Newcomb, Wash-Assn.; Dr. Robinson Newcomb, Washington, D. C.; Dr. Paul H. Nystrom, Limited Price Variety Stores Assn., Inc.; Ralph H. Oakes, Loyola University, New Orleans; Franklin L. Parsons, Federal Reserve Bank, Minneapolis; Dr. Clyde W. Phelps, University of Southern California; Robert T. Pullar, American FNKA Conv. Dr. Leha F. American ENKA Corp.; Dr. John F. Pyle, University of Maryland; Dr. B. U. Ratchford, Duke University; Dr. Ver-Ratchford, Duke University; Dr. vergil D. Reed, J. Walter Thompson Co.; Roy L. Reierson, Bankers Trust Co.; S. V. Reiss, Graybar Electric Co.; H. E. Riley, U. S. Department of Labor; Robert Rockafellow, University of Rhode Island; John G. Rolph, N. Y. C.; Arch D. Schultz, Ohio Chamber of Commerce; Thomas Semon, Stewart,

Dougall & Associates, Inc.
DeVer Sholes, Chicago Association
of Commerce & Industry; Frederic L. Simmons, Guaranty Trust Co. of N. Y.; C. E. Skinner, Gulf Oil Corp.; Dr. Arthur A. Smith, First National Bank in Dallas; Dr. Tillman M. Sogge, St.

Olaf College; George E. Soule, Bennington College.
William R. Spriegel, University of Texas; Walter K. Storm, Chicopee Mfg. Corp.; John R. Stewart, Board of Commerce, Detroit; Dr. W. Mackensie Corp.; John R. Stewart, Board of Commerce, Detroit; Dr. W. Mackenzie Stevens, Mackenzie Stevens & Co.; John C. Swartley, American Telephone & Telegraph Co.; William W. Tongue, Park Ridge, Ill.; Robert P. Ulin, McGraw-Hill Publishing Co.; Arthur R. Upgren, Dartmouth College; Paul J. Weber, Hercules Powder Co.; Rudolph L. Weissman, Franklin Cole & Co.; W. O. Yoder, Indiana University; Eugene C. Zorn Jr., American Bankers Association. can Bankers Association.

THE RECORD REPORTS

PERSPECTIVES

NEW WRINKLES: How about trying basements in houses? The English publication Building Materials Digest in a recent issue suggests that housing would profit greatly from reintroduction of the basement, "not so much for habitation in the old sense, but as a place for storage, laundry operations, drying and perhaps for heating plant."

FREEDOM OF THE ARTS," the President noted last month, "is a basic freedom, one of the pillars of liberty in our land." In a message recorded for the opening ceremonies of the 25th anniversary of New York's Museum of Modern Art and conveying his "warmest greetings," Mr. Eisenhower said: "For our Republic to stay free, those among us with the rare gift of artistry must be able freely to use their talent. Likewise, our people must have unimpaired opportunity to see, to understand, to profit from our artists' work. As long as artists are at liberty to feel with high personal intensity, as long as our artists are free to create with sincerity and conviction, there will be healthy controversy and progress in art. Only thus can there be opportunity for a genius to conceive and to produce a masterpiece for all mankind."

DESIGNING FOR PEOPLE: In a recent symposium on "Physical Facilities for Research" held at New York University, Clifford W. Rassweiler, vice chairman of the board and vice president for research and development, Johns-Manville Corporation, made a strong plea for more emphasis in research facilities as in factories on "those intangible factors of planning and design that provide the conditions most suitable for creating the proper personal attitudes — attitudes essential to increasing the productivity of the individual worker." Such matters as location, exterior appearance, working space that is "cheerful and comfortable," prefer-

ably air conditioned, and ample enough to give each man "the feeling of pride and ownership in an area of his own," attractive public areas and employe facilities - all of these things are, said Mr. Rassweiler, "particularly important when your production force is composed of men of education and high intelligence . . . when you are asking men to produce with brains rather than hands." Except for location, Mr. Rassweiler noted, the same factors apply with as much force to works laboratories as to monumental new research centers. "We must build research laboratories that are designed for maximum mechanical efficiency," Mr. Rassweiler said. "We must build research laboratories that represent economical use of the money spent. But we must not forget that the real measure of whether the money is well spent or poorly spent depends not only upon the extent to which the facility will multiply the workers' productivity mechanically, but also upon whether it will attract workers who can make an individual contribution that is worthwhile multiplying, and whether the facility will help build the worker attitude and the organization morale that create the maximum will to produce."

How do the teaching methods affect the design of school premises?" - subject of an article in the Yugoslav magazine Arhitekt - gets the doctrinaire answer on the other side of the Iron Curtain. In the words of the English translation: "The main task of the Socialist school is to facilitate a harmonious psychophysical growth of our child who should grow to be a free and purposeful Socialist man with a great range of understanding and distaste for bureaucracy and strait-laced mentality. . . . A suitable school building is a pleasant and comfortable abode where the collective life and collective consciousness are able to develop."

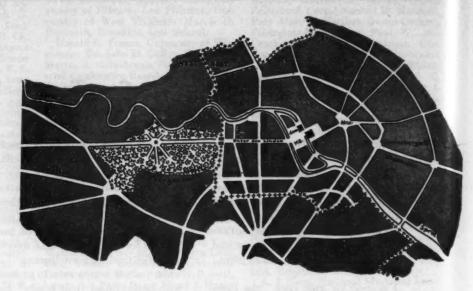
THERE'LL HAVE TO BE SOME CHANGES made in the design of ball parks before the present lamentable trend in attendance can be reversed, according to Frank Frisch; and in an article in a recent issue of Blue Book he outlines some of them. "I envision a ball park of the future," dreams Frisch, 'in which use will be made of every available gadget to please the customer. His car will be speedily parked in an underground garage. There'll be a nursery where Baby can be left in good hands while Mama cheers for the home team. The stands will be of cantilever construction, eliminating posts, and curved to face the infield. Seats will be spacious and cushioned with foam rubber. Johnny will have his peanuts and his Coke, but Papa will be able to take Mama to a well-appointed cocktail lounge for a nip or the whole family to a café for a pre-game dinner. As for Junior and his girl, he can take her dancing in the lounge after the game. Above the field, a vast plexiglas roof will roll out when it begins to rain. The electrified scoreboard will include pitchers' and batters' averages. An announcer will explain the points at issue whenever there's rhubarb. The players' dressing rooms, the bullpens and the dugouts will all be air conditioned." Take us out to the ball game!

WHAT'S WRONG WITH MODERN HOUSES, according to china impresario Carole Stupell, is - no china closets. Speaking from what personal bias may be imagined, Miss Stupell wistfully guesses that sales of china would zoom "300 per cent" if architects could manage to include real closets for china in the program of the contemporary house. The lady knows exactly what she means by closet (it's not cupboard) and in fact a while back got Architect Morris Ketchum to prepare actual plans for what she conceives to be the beau ideal of the type. Alas, the prototype has yet to be built.

THE RECORD REPORTS

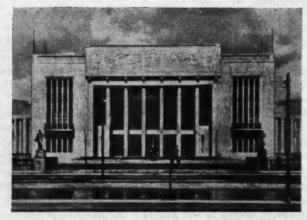
THE RISE OF A TWO-HEADED PHOENIX:

PERIODICAL REPORT



East Berlin





Above, left: workers' flats in Stalinallee, with state stores at either side of the columned entrance; project by Professor Paulick. Above, right: entrance to the Sports Hall in Stalinallee; project by Professor Paulick. Right: project for a 200-meter tower in Marx-Engels Platz



Above: the Soviet Embassy in Unter den Linden was built in 1951; the author calls it "a school example of neo-classicism"



ARCHITECTURE IN POSTWAR BERLIN

East and west seem no nearer to meeting in the rebuilding of Berlin than they did in Kipling's India. The Dutch journal Bouw carried in its July 31 issue a critical study of German architecture, in both the Eastern and Western sectors, since the war; the report was written by R. C. Hekker.

The problem of two or more esthetic theories in mutual opposition is not new to Germany, says Mr. Hekker; this is an area, he observes, which has been a battlefield of architectural philosophies since mediaeval times, the defeat of the Bauhaus movement by the Third Reich's neo-classicists being only the most recent of violent changes.

This city was also, of course, a virtual battlefield of World War II — 32 per cent of its housing was destroyed; before

the war Berlin real estate was valued at 15½ billion marks, of which 4½ billion "disappeared." The mess to be cleaned up after the war consisted of 75 million cu metres of rubble.

In the East

In 1950 the "German Democratic Republic" passed a rebuilding law, under which local communities might outline reconstruction plans subject to government approval. The fundamental standards for city planning, as set up by the government, are: to oppose too large a spread of cities where unreasonable expense of construction and maintenance can be anticipated; to achieve a "characteristic" skyline at the center of the city by means of large civic squares, special buildings and tower structures;

to decrease building heights and density toward the outskirts; to direct traffic along roads moving around the center. Only city plans in which the more important streets and squares have been developed may be submitted.

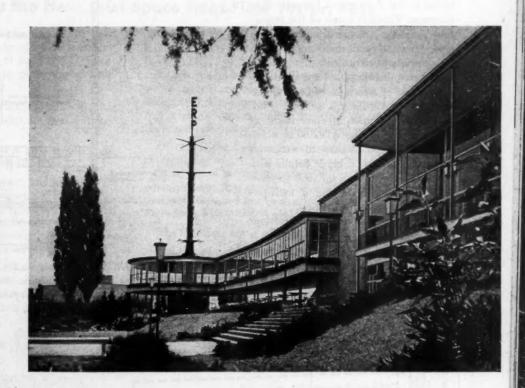
Another requirement for these plans is the preservation of local character: the architecture must be "democratic in content" and "national in form." After a brief flurry of disagreement among East German architects as to whether 19th Century Classicism or 20th Century Bauhaus best typified German architecture, the decision went to the Classicists. The Academy of the Art of Building, founded in December 1951, is the arbiter of architectural taste in the East and is firmly on the side of Classicism.

(Continued on page 346)

West Berlin

Below: a cooperative housing development built in West Berlin in 1952-53





Above: Marshall House was built as an exhibition center in 1950; Bruno Grimmek, architect. Below, left: a dormitory for the Free University of Berlin, finished in 1953; Herm. Fehling, architect. Below, right; the Berliner Bank, also completed in 1953; the architect was Gerh. Siegmann





NEW PLANS AND SPECIFICATIONS SET FOR POST OFFICE DEPARTMENT'S LEASED SPACE

New basic plans and specifications to guide architects in the design of space to be leased for post office purposes have been prepared by the Post Office Department and distributed to its field offices.

This represents an entirely new approach toward the problem of assuring that the Post Office gets at least its minimum requirements in property that it leases, old or new. Heretofore, the plans had been loosely drawn, and there were no specifications to guide private architects designing buildings to be leased to the government for post office purposes. This left many of the important decisions on specifications up to field personnel and made room for a wide variety of treatment.

The new drawings and specifications, four copies of which have been placed in each regional office of the Post Office Department, tighten up the criteria, at the same time leaving a flexibility which will enable field officials to work out some structural and other details with the private architect and the sponsor. This is achieved through a multiple-choice method of specification.

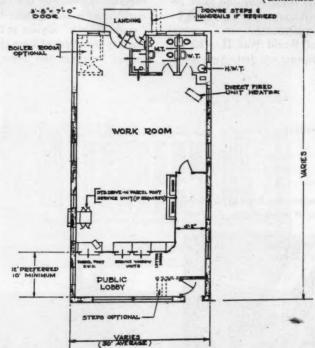
For example: flooring specifications say hard maple, $\frac{3}{16}$ -in. asphalt tile or linoleum now will be permissible as floor covering in offices; for workroom,

finance section, locker and swing room areas and mailing vestibules, hard maple, ½-in. asphalt plank or ½-in. asphalt tile will be allowed.

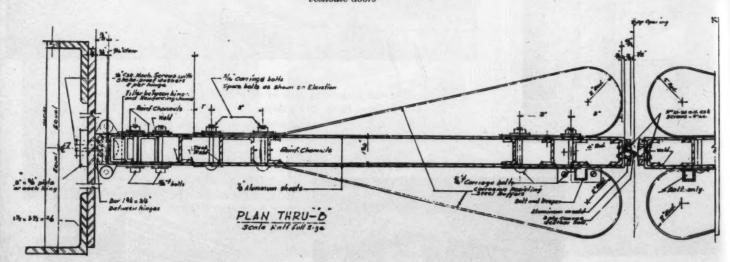
Sample site plans for drive-in service are included in the new layouts, indicating that more emphasis might be given this type of planning in the future.

Drawings Are "Flexible"

The drawings are intended to be flexible enough for adaption to the requirements of almost any site. They (Continued on page 298)

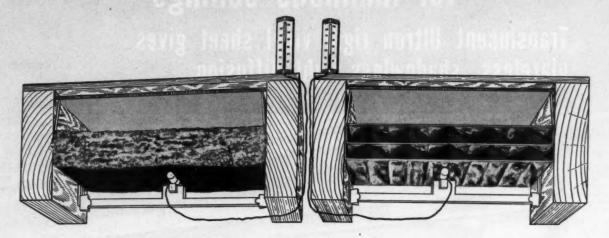


TWO DRAWINGS of the many on the Post Office Department's 13 sheets of new basic plans for leased facilities. Above: typical floor plan for a 1500 to 3200 sq ft post office building. Below: from a sheet of standard details for mailing vestibule doors



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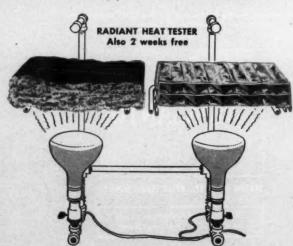
Just place it on a desk or table and plug it in. The new Joist-Space Heat-Tester more closely simulates actual joists and building spaces. The flow of heat comes from the surface of a heated board, much the same way as heat flows from a warm floor, wall or ceiling.

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The new Joist-Space Heat-Tester employs all 3 methods of heat flow: Convection, Conduction, AND Radiation.

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You will also be able to test and compare the new, full depth, EDGE-TO-EDGE multiple accordion aluminum insulation which we will send you FREE. Its multiple aluminum and fibre sheets drastically reduce outer and inner CONVEC-



TION. Its multiple spaces of low-density air are very poor CONDUCTORS. Its multiple aluminum surfaces resist RADIATION or heat rays with 97% reflectivity, and 3% absorptivity and emissivity. (In addition, its permeability to water vapor is zero. Infiltration under the flat, stapled flanges is slight. Condensation-formation is minimized on or within this scientific construction of multiple air spaces, accordion fibre, and layers of edge-to-edge aluminum.)

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But you can also make some interesting and illuminating tests of your own, in the privacy and convenience of your office, by mailing the coupon.

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After careful comparison of available materials, Franklin Elementary School's architect and lighting engineer chose new ULTRON rigid vinyl sheet for luminous ceilings in the school's unique, demountable pentagonal-shaped classroom additions.

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Luminous ceilings made of ULTRON rigid vinyl sheeting offer maximum light diffusion with a minimum of shadows. Used in association with an effective fluorescent lighting system, the luminous ceiling gives even, shadowless light diffusion in all parts of the classroom. In addition, ULTRON rigid vinyl sheeting has greater resistance to darkening or blackening caused by prolonged exposure

to ultra-violet rays.

Luminous ceilings made of ULTRON rigid vinyl sheeting hide unsightly pipes and ducts, reduce building costs. Sprinkler system nozzles can be concealed because ULTRON rigid vinyl sheeting gives way at temperatures slightly below that necessary to set off automatic sprinkler systems. These lightweight luminous ceilings are very easy to disassemble for quick cleaning in a mild detergent solution. And when destaticized, minimum maintenance is required.

For full information on new ULTRON rigid vinyl sheeting, write Monsanto Chemical Company, Plastics Division, Room 6101, Springfield 2, Mass.

Note that functional, beautiful luminous ceilings made of ULTRON rigid vinyl sheeting completely diffuse the light - no "bright spots" or shadows!

Luminous ceiling fabricated by Marlux Corporation,

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Architectural Research

ONE MILLION DOLLARS is being sought by the American Architectural Foundation, the sum to be spent on the expansion of architectural research. Applications of the fund, suggests Douglas W. Orr, F.A.I.A., president of the foundation, might include the study of light, color, sound and solar energy as they affect architecture, and a study of the problems of decentralization of industry and commerce. An intensive canvass of A.I.A. members is now underway, and the foundation's goal is a \$100 contribution from every architect.

With the A.I.A.

TREKKING ARCHITECTS, led this year by Glenn Stanton, past president of the A.I.A., visited Europe and the Near East and returned to New York October 7. The month-long journey, arranged by the United States Travel Agency, Inc., took the travelers to Madrid, Granada, Cordoba, Rome, Cairo and Paris. The group included Mr. and Mrs. Charles F. Cellarius, Cincinnati; Mr. and Mrs. Edward A. Ramsey, Columbus, Ohio; Lucien E. D. Gaudreau, Baltimore; Arlington T. Hardell, Atlanta; Janet · E. Hooper, New Orleans; Walter L. Moody, Los Angeles; Mr. and Mrs. John R. Fugard, Chicago; and Richard Walker, R.I.B.A., who represented the travel agency. The A.I.A. has announced plans for a repetition of this year's South

American Trek, to leave Miami February 1, 1955, and to return the first of March.

A WIDER PUBLIC APPRECIATION of outstanding architecture, as exemplified by the 1954 A.I.A. Honor Awards, is the object of a "multiple exhibition" of 25 of the chosen designs being promoted by the Institute. Portfolios of the panels, reproduced by photo-lithography, have been distributed to all A.I.A. chapters and are available to the public for \$25 a set.

THE CATHEDRAL AT CHARTRES has acquired a new stained glass window, a presentation of the A.I.A. The window, which is dedicated to St. Fulbert, Bishop of Chartres who founded the cathedral, was designed by François Lorin, French stained glass artist; M. Lorin has incorporated his re-creation of "Chartres blue" in a contemporary design. The A.I.A.'s Henry Adams Fund and individual architects and A.I.A. chapters donated the funds for the window.

Conference on the Module

AN EVALUATION of the present success of modular measure and an investigation of its possible future uses will occupy participants at a research conference scheduled for December 9 at Washington's National Academy of Sciences. The meeting will be conducted by the Building Research Institute, and is sponsored jointly by the American

Standards Association, the American Institute of Architects, the Producers' Council and the National Association of Home Builders. The conference is open to general contractors, manufacturers, builders and architects as well as other interested individuals; program and further information is available from William H. Scheick, Executive Director, Building Research Institute, 2101 Constitution Ave., Washington 25, D. C.

Planners Meet

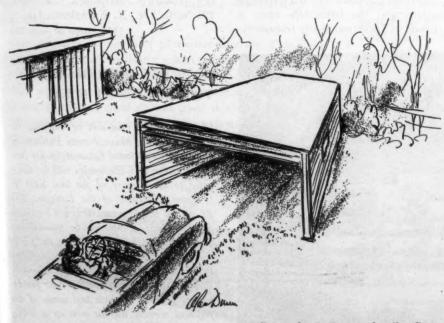
THE American Society of Planning Officials held its 20th anniversary meeting September 26-30 in Philadelphia, with zoning - as always - and the new urban renewal provisions of the Housing Act of 1954 high among program items of interest. A clinic on new communities produced critiques and discussion that ranged from Radburn, N. J., to Park Forest, Ill., and included a report on the 60-odd industrial new towns built in Canada since World War II. Lewis Mumford addressed an evening session on "The Spirit of the City," as exemplified in the work of the late Scottish planner Patrick Geddes - respect for the city's geographic and historic core, for its need for continuity in space and time and for its essential variety were described by Mr. Mumford as the keys to Geddes' approach. Thomas McDonough, A.I.A., of Boston was elected as the new A.S.P.O. president, with Humphrey Carver of Central Mortgage and Housing Corporation (Canada's equivalent of H.H.F.A) as vice president and Morris Hirsh, director of the South Side Planning Commission, Chicago, treasurer.

"Balance" for Students

THE BEAUX ARTS INSTITUTE OF DESIGN last month announced plans for Balance, a new publication "dedicated to the architectural student." The aims of Balance are listed as follows: to keep students informed of some of the latest developments in the thinking of the profession; to provide a forum for students, teachers and practitioners; and to give the news of programs, judgments and reports of juries of national competitions conducted by the B.A.I.D.

Short Course for Architects

Church Planning is the subject to be surveyed at the Architects' Short Course (Continued on page 16)



-Drawn for the RECORD by Alan Dunn

(Continued from page 15)

being sponsored for the third year by the Department of Architecture at the University of Illinois. Architects, churchmen and "specialists" will lead sessions covering such topics as stained glass, sculpture, metal work, fabrics, decorative arts, painting and financing. The course, under the direction of Prof. Robert J. Smith and Robert K. Newton, will be held in Urbana Nov. 10–12.

Focus on Redevelopment

URBAN RENEWAL - in the new language of the 1954 housing act - and redevelopment - in the vocabulary of the now superseded Housing Act of 1949 - were the major topics on the program and in the corridors at the 21st annual conference of the National Association of Housing Officials last month in Philadelphia. The site provided part of the program, as delegates flocked to planned tours of the city's numerous redevelopment and public housing projects. A new item on the N.A.H.R.O. program this year was a workshop in industrial redevelopment conducted by Carl Feiss, now a planning and urban renewal consultant in Washington. Mr. Feiss called the 13 exclusively and 17 predominantly industrial redevelopment projects listed by the Housing and Home Finance Agency among the 175 Federally-aided projects which have reached the final planning stage "a small but important beginning," and predicted increasing interest in industrial-type redevelopment, partly in response to slightly more encouraging provisions in the new housing act. Participants in the session included representatives of three

groups described by Mr. Feiss as "the three major organizations which have concerned themselves with industrial development"—the Urban Land Institute, the Society of Industrial Realtors and the Area Development Division of the U. S. Department of Commerce.

Competitions for Architects

THE American Association of School Administrators is inviting entries for its annual school architecture exhibits, displayed at the association's regional conventions; public, private or parochial schools erected or under contract since January 1950 are eligible; entry blanks, due January 15, 1955, are available from the A.A.S.A. office at 1201 16th St. N. W., Washington, D. C. . . . The annual house competition sponsored by the Indianapolis Home Show, Inc., is open to architects, architectural designers, draftsmen and students; awards range from \$500 for first prize to \$25 for honorable mentions; information is available at 1456 N. Delaware St., Indianapolis 2, Ind. . . . A competition for Catholic institution design has been announced by the magazine Church Property Administration, the winners to be exhibited at the National Catholic Educational Association Convention in April: details can be obtained from the magazine at 20 W. Putnam Ave., Greenwich, Conn. . . . Rome Prize Fellowships are once again offered by the American Academy in Rome to students and artists in architecture and landscape architecture; the fellowships carry a stipend of \$1250, round-trip transporta-

tion to Rome and a year's residence at the Academy; the deadline for applications is January 1, 1955; additional information is available from the Executive Secretary, American Academy in Rome, 101 Park Ave., New York 17. . . . Applications for the 1955 Brunner Scholarship are being considered by the New York Chapter of the American Institute of Architects; the \$2400 scholarship is granted for advanced study in a "specialized field of architectural investigation"; entries are due November 15 at the chapter offices, 115 E. 40th St., New York City. . . . Two competitions recently announced by the National Association of Home Builders include a new design contest, for houses built by architect-builder teams, and a neighborhood development award: entries are due by December 10; inquiries about the awards will be handled by the N.A.H.B. Construction Department, 1028 Connecticut Ave., N. W., Washington 6, D. C. . . . The J. C. Nichols Foundation Award, a \$2000 grant-in-aid given in 1954-55 for graduate study in architecture, city planning, civil engineering or industrial management at Georgia Institute of Technology, is open only to students or prospective students in the Graduate Division of that school; information on requirements for the award, which is sponsored by Georgia Tech and the J. C. Nichols Foundation of the Urban Land Institute, can be obtained from the J. C. Nichols Memorial Award Committee of Georgia Institute of Technology, Howard K. Menhinick, Chairman, 225 North Ave., N. W., Atlanta, Ga.

(More news on page 20)

TO BE BUILT AT M.I.T.

Planned as an extension of existing research facilities, Massachusetts Institute of Technology's projected Laboratories for Nuclear Science and Electronics will be dedicated to the memory of the late Karl T. Compton, chairman of the Institute. The \$3 million building was designed by Skidmore, Owings & Merrill. In announcing the project, Dr. James R. Killian Jr., president of M.I.T., said, "We are confident that these new facilities which will so largely strengthen M.I.T.'s education and fundamental research in these two areas of the physical sciences will be seen as a fitting memorial to M.I.T.'s ninth president"





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For further information on how you can do the complete job of cooling, heating and ventilating more effectively and economically, see our catalog in Sweet's Architectural File, or write Herman Nelson Unit Ventilator Products, American Air Filter Company, Inc., Louisville 8, Kentucky.



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Adaptability of Insulated Metal Walls to virtually any type of building . . . their low-cost advantages . . . the speed with which they can be erected . . . the permanence and attractiveness of Stainless Steel or Aluminum exteriors, and the inherent decorative potential in modern design effects—whether used exclusively or in combination with brick, glass block, or other materials—are some of the outstanding features of these highly efficient, light-weight curtain walls which have won for them instant approval and nationwide acceptance. Illustrated here are a few representative buildings of various types in which Mahon Insulated Metal Walls have been employed to good advantage. In each case, substantial building economies were realized through lower material cost, lower labor cost, and the cumulative savings deriving from reduced construction time . . . buildings can be quickly enclosed with Insulated Metal Walls-even under low temperature conditions which would preclude masonry construction. Mahon Insulated Metal Walls are available in three distinctive exterior patterns in Stainless Steel, Aluminum, Galvanized Steel, or Enamel Coated Steel. Over-all thermal properties are equivalent to a conventional 16" masonry wall. Mahon Fluted and Ribbed Walls can be field erected up to sixty feet in height without a horizontal joint—a feature of Mahon walls which is extremely important in powerhouses, auditoriums, and other buildings where high expanses of unbroken wall surface are common. See Sweet's Files for complete information or write for Catalog B-55-B.

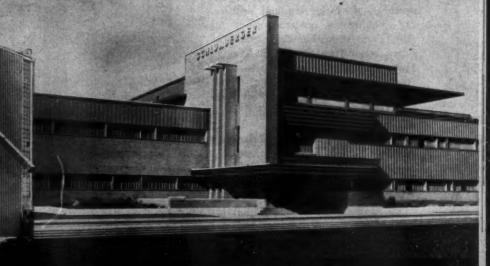
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IS GRAND CENTRAL TERMINAL "OUTMODED"? OWNERS CONSIDER REPLACEMENT SCHEMES

AT LEAST TWO PROPOSALS for replacing New York's Grand Central Terminal with a more "economic" structure were under consideration last month by the New York Central System — one of them based on an architectural scheme by Fellheimer and Wagner, New York architects and engineers, in which the New York, New Haven and Hartford Railroad had also expressed an interest; and the other put forward by William Zeckendorf's Webb and Knapp (I. M. Pei, architect).

A statement by Robert R. Young, chairman of the New York Central's Board of Directors, explained that the railroad had asked "certain architects and developers" to make suggestions for utilization of air rights over the terminal property. Taxes now being paid on those air rights, Mr. Young said, indicate they are the world's most valuable. Central would give no further information about identity of any others of the "certain architects and developers."

"World's Tallest Building"

The Webb and Knapp scheme, initially announced as an 80-story structure to contain some five million sq ft of rentable office space and to be topped by an observation tower that would give it the Empire State's 23-year-old title of "the tallest building in the world," was being "restudied" and no sketches were released.

As originally proposed, the Webb and Knapp plan had been worked out to minimize the disturbance to the operation of existing terminal facilities. It contemplated construction of an elevated plaza within the confines of Forty-second Street, Vanderbilt Avenue, Forty-sixth Street and Depew Place (the overhead roadway east of Grand Central serving northbound Park Avenue traffic). The new building would have dimensions of 275 ft by 275 ft (compared with 722 by 395 of the present building) and would have floor area in excess of 60,000 sq ft a floor.

Focus on "Mobility"

Alfred Fellheimer emphasized his firm's concern with "mobility" in and around the new building. "The present building is, in effect, a 'Chinese Wall,' he said, "and we are as concerned with achieving mobility around the building

as we are with the actual design of the building."

The Fellheimer and Wagner proposal would combine "the largest office building in the world" with extensive changes in the street pattern intended to relieve the perennial traffic jams and pedestrian crowding of the area. The severed east and west parts of Forty-third and Fortyfourth streets would be connected across the station at the level of Vanderbilt Avenue, Depew Place would be reconstructed as a public throughfare connecting the new street extensions. The present winding Park Avenue overpass would be rebuilt in a straight line. The population of the new office building upwards of 30,000 people - would be able to enter from all the newly-opened streets as well as through the present entrances. The principal entrance for long-distance travelers would be a new ticket and baggage concourse off Vanderbilt Avenue, between Forty-third and Forty-fourth streets, with taxicab turnouts off both streets. An automatic parking garage within the building would offer space for 2400 cars.

Central's consideration of these—and perhaps other—proposals was beset with the controversy which is wont to accompany the more dramatic assaults of the practical upon the sentimental. Is it "practical" to destroy a monument—even a modern one?—even if the owner's tax and revenue problems and the public's convenience seem to demand it?

Architectural Forum has one answer and seems inclined to lead a crusade forthwith to "save Grand Central." The architect who was in charge of planning the existing building for its architects, Reed and Stern, has another. Explaining the decision of his present firm, Fellheimer and Wagner, to participate in presentation of proposals for replacing the old building, Alfred Fellheimer says:

"We carefully weighed our own pride in the present building, and its emotional and esthetic significance to people all over the world. Our reluctant but firm conclusion is that neither pride nor reverence should be permitted to clot the vitality of a great metropolis. In turn, that very vitality may guarantee that if one expression of human aspirations must be destroyed in the process of growth, it will be replaced by an even greater one."

NEW GRAND CENTRAL? Rendering of Fellheimer and Wagner proposal for scheme to replace existing terminal building (completed in 1913) looking east across Vanderbilt Avenue, with Forty-third and Forty-fourth streets in left foreground. Setback roofs are envisioned as roof gardens adjoining restaurants and stores on adjacent tower floor. Roof would provide helicopter landing field



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- Nelex MI Heater Units provide clean, uniform and rapid heat with no maintenance... the product of a thousand uses for industry, home and farm.

Now on the market, after years of research and testing, Nelex MI Heater Units offer the perfect solution to many of your heating problems.

Designed to operate at 500° F. in open air, Nelex MI Heater units can tolerate a working temperature of 1,000° F., when immersed in liquid to exclude oxygen.

The low cost of Nelex MI Heater units will surprise you. The average electrician using standard tools and equipment can quickly install these rugged, flexible heaters.

Write for descriptive Bulletin No. 1603 for the background, application and performance characteristics of Nelex MI Heater Units. Nelson engineers will be glad to assist you in figuring application for any of your own special heating problems.

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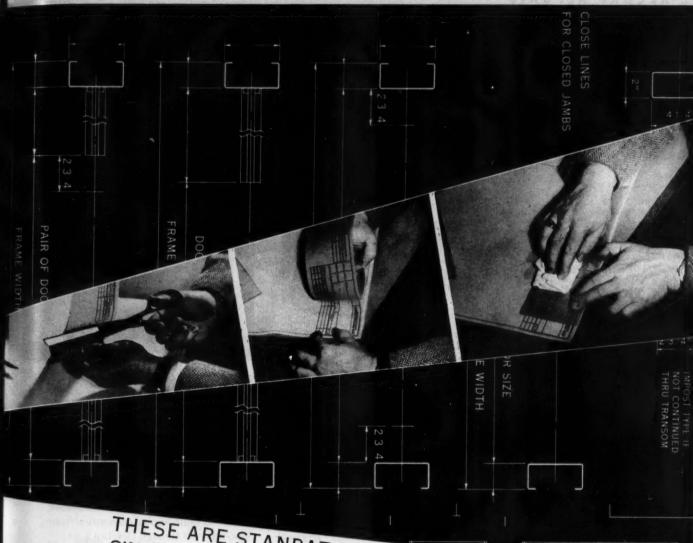
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22



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DESIRED, STRIP AWAY PROTECTIVE MASK, PRESS ONTO
DRAWING AND THE BLUEPRINT WILL SHOW PERFECT
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DOOR SIZES TO BE INDICATE

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THIS GLUED TO YOUR LETTER HEAD WILL BRING YOU MORE STANPATS

MARK -

THE BIG ISSUE IS SCHOOLS AT GULF STATES MEETING

COMMUNITY AID TO EDUCATION" was the theme of the fifth annual Gulf States Regional Conference of the American Institute of Architects, held at the end of September in Little Rock, Ark.

Among addresses heard by the 447 people attending the conference (the 212 A.I.A. members were joined by a large number of educators and other guests) was the banquet speech given by Wayne O. Reed. Assistant Commissioner of Education in the U.S. Office of Education. Noting the fact that in the next five years the country will need 720,000 new classrooms - enough to take care of the present shortage of 370,000 classrooms, replace 100,000 more as they obsolesce, and provide the 250,000 required by anticipated enrollment increases - Mr. Reed said that the annual rate of construction for the next six years must nearly triple that of the past three years if school facilities are to be adequate by 1960. This would amount, he said, to a building program costing \$28.8 billion.

Mr. Reed also said he looked forward to the time when every school building program will be preceded by an "intensive comprehensive survey": "In fact, I believe it is absolutely essential," he said. Such surveys should provide data, he noted, on such matters as current and anticipated enrollment loads, community mores and desires for education, evaluations of existing facilities and curriculum space needs in the light of modern trends.

Planning the School Program

Charles R. Colbert, New Orleans architect, delivered an address on "School Plant Programming." Mr. Colbert recommended that school programming and planning be under the direct supervision of one man only, rather than under the authority of the board of education as a whole. He suggested that particularly in larger cities a planning and programming office should be set up as an organ of the school board; in the case of a building plan which requires only a single building, the architect should be entirely responsible for the architectural program.

"A New Regional School Architecture" was the subject of a talk by architect William W. Caudill, of Bryan, Tex. Good school architecture, he said, is achieved by a balance of three factors: educational requirements, environmental factors and economy. Mr. Caudill said that school builders often failed the economic test, and that architects and educators should work closely together to insure the proper three-way balance. He also advised architects to "learn something about children" before designing a school.



Delegates also heard Harry S. Ashmore, executive editor of the *Arkansas Gazette*, speak on "The Negro and The School" (for a review of Mr. Ashmore's book *The Negro in the Schools*, see page 46).

Edmund R. Purves, executive director of the A.I.A., reviewed accomplishments of the profession and of the A.I.A.



Participating in the California meetings were, above, left: John Bomberger, Modesto, Calif. — treasurer of the California Council of Architects, and Malcolm Reynolds, Oakland — president of the council. At the Sierra-Nevada Regional Conference, above, right: Arthur Holmes, A.I.A. convention manager; Earl Heitschmidt, first vice president of the A.I.A.; Donald Beach Kirby, regional director of the Sierra-Nevada district; and Waldo B. Christenson, Northwest regional director

REGIONAL COUNCIL FORMED AT A.I.A. MEETING

A NEW REGIONAL COUNCIL was organized at the Sierra-Nevada Regional Conference. The "California-Nevada-Hawaii" regional council, to be made up of presidents of 14 chapters in the region, will act as an advisory board to director Donald Beach Kirby and will coordinate A.I.A. programs among the chapters.

The major discussion at the meeting, which was held October 2 at Hoberg's Lake County, Calif., was a panel on "Octagonal Relations," a survey of institute and regional affairs. Among participants in this discussion were: Edmund R. Purves, executive director of the A.I.A.; Earl T. Heitschmidt, first vice president of the A.I.A.; Waldo B. Christenson, Northwest district regional director; Arthur B. Holmes, A.I.A. coordinator for chapter affairs and convention manager; and Walter M. Megronigle, of Ketchum, Inc., public relations counsel to the A.I.A.

Delegates also heard a panel discussion on "Building Our Chapters."

California Council Meets

The California Council of Architects also gathered at Hoberg's Lake County

to hold its ninth annual convention from September 30 through October 2.

The central attraction at the convention was a large panel discussion on "Manufacturers' Literature — From Mail Basket to Waste Basket," moderated by Robert E. Burns, San Francisco attorney. The 20-member panel made the familiar comments on the desire of architects for more technical information in advertising.

At a public relations panel, of which Everett Parks, head of the council's public relations committee, was chairman, it was decided that the official annual publication *The California Architect* would become a quarterly magazine edited for the public. The first issue is scheduled for publication in April 1955; 30,000 copies of the magazine are to be distributed free in such places as "bus stations and doctors' offices."

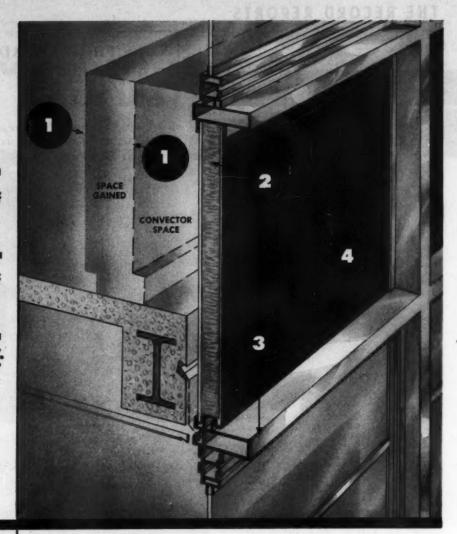
Other panels at the convention covered residential construction, school building, hospital relations, commercial and industrial relations and governmental relations.

A total of 700-750 participants were registered at the meeting, although only 180 of these were architects.

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"TEXWALL

by Texlite"



T-5: Thin, flat, architectural panel in color, designed for standard glazing. The exterior face of Lifetime Porcelain Enamel is laminated to an inert rigid stiffening core. Interior face is of porcelain enamel or zinc-coated steel. Thickness: ¼ inch to 3% inch. U-values: 1.18 to 1.08 Btu.

ARCHITECTURAL PANELS

TEXLITE"

TEXWALL BY

T-10 (shown above): Complete insulating wall panel faced with lifetime, colorful porcelain enamel. Fiber glass core provides permanent thermal efficiency. Lami-nated construction maintains surface flatness.. panel rigidity. Interior face ... a surface for finishing as desired. Thickness: 1 and 3/8 inches to 2 inches. U-values: 0.20 to 0.14 Btu.

T-20: Insulated wall panel faced with porcelain enamel. Treated core provides structural and in-sulating qualities. Interior face of porcelain enamel or zinc-coated steel. Thickness: 1 inch to 2 inches. U-values: 0.28 to 0.15 Btu.

"TEXWALL BY TEXLITE"... a trademark designating an I.W.S. (Integrated Wall System) including insulated architectural panels (T-5, T-10, T-20) complete with supporting framework and windows as specified. Panel construction and special framing members permit wall breathing and moisture elimination . . special features protected by patent application.

ADVANTAGES

- FLOOR SPACE SAVINGS: Increased revenue from added rental space . . as compared with conventional masonry construction.
- BETTER THERMAL INSULATION: Low heat transmission decreases cost of year 'round air conditioning.
- CONSTRUCTION SPEED AND ECONOMY: Lightweight Structural System speeds erection, decreases construction costs, provides earlier rental revenue.
- LIFETIME TEXLITE COLOR: Architectural porcelain enamel panels with 700 permanent colors ranging from architectural mattes to high gloss finishes. . with minimum surface maintenance. WRITE TODAY - for bulletins containing complete factual data.

Texlite's staff of registered architects and structural engineers are available for technical consultation. Texlite's skilled craftsmen and technical know-how assure maximum quality. Many of today's monumental buildings are being designed with "Texwall by Texlite."



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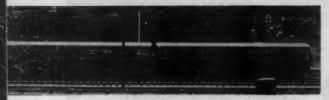
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YEAR OF PROGRESS

THE RECORD REPORTS

NEWS FROM CANADA By John Caulfield Smith



At left: cars for the new subway are painted bright red with yellow trim. Below: two of the 12 new stations—at left, the Wellesley Station; at right: the Davisville Station





THE SUBWAY BEAUTIFUL: TORONTO OPENS A NEW LINE

A SPANKING NEW SUBWAY was opened earlier this year by the Toronto Transportation Commission; the public, it has been reported, is responding with the enthusiasm of "a small boy with his first electric train." The project, which included 12 stations, had John B. Parkin and A. S. Mathers as architectural advisers to the Commission.

Flowers and soft colors are offered for the pleasure of the passenger. The flowers are planted along the banks of the open-cuts, used in some places instead of the deep tunnel; forsythia, lilac, weigela, japonica and verbena appear in season.

The walls of the stations are finished in opaque glass, which is yellow, green or gray. The trim colors selected were black and dark shades of red, green and blue, permitting a different color combination for each of the 12 stations. The terrazzo floors and the ceilings are slightly tinted to blend with the walls.

The seven stations which are built above ground are constructed with semiglazed brick bearing walls, with supplementary concrete or steel columns. The street car and bus shelters which adjoin some of the stations are partly of corrugated glass and glass block.

(Continued on page 30)

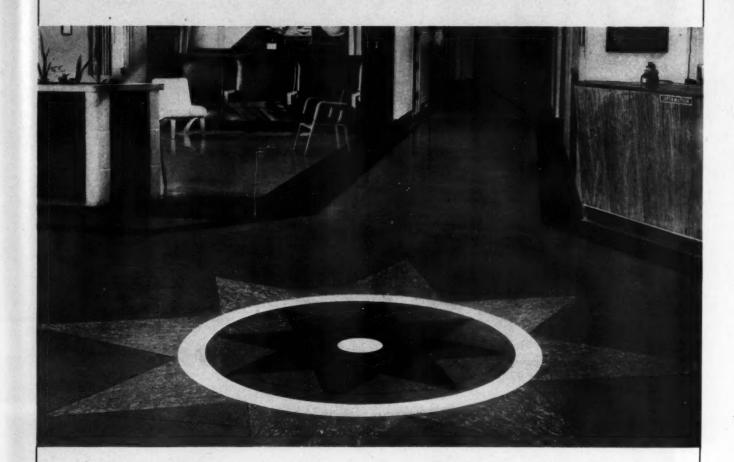


Above: control area in the College Street Station—control areas contain service rooms as well as public telephone, lockers and concessions. Below, left: continuous fluorescent fixture gives "ribbon" of light directly over the edge of the platform; platform flooring is terrazzo. Below, right: the interior of one of the new cars





Looks like Dunham Hospital found the perfect flooring!



Specifying the right floor covering for a hospital calls for careful accounting of many factors—and Cincinnati's Dunham Hospital answered important problems when it installed Goodyear Rubber Flooring.

It's quiet—"hushes" hospital corridors! The natural sound-deadening qualities of Goodyear Rubber Flooring hush clatter and soften voices—make it ideal for Dunham Hospital.

It's resilient — easy underfoot! The cushioned underfoot-comfort offered by Goodyear Rubber Flooring proved a boon to convalescents and hospital personnel as well.

It's lovely-adds cheer and warmth! The luxurious beauty, wide range of colors and pattern

possibilities of Goodyear Rubber Flooring lend welcome serenity to the surroundings.

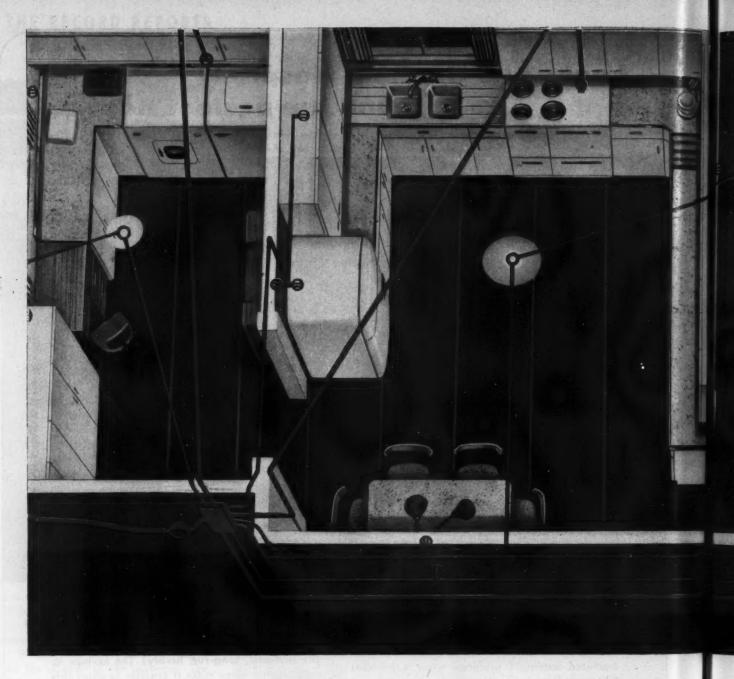
It's low-cost, long-run luxury! The savings in maintenance alone make it possible to enjoy this luxury flooring at no greater long-run cost:

Available in both tiles and yard-wide continuous rolls — densely compounded, Goodyear Rubber Flooring has a "cured plating" which makes it as lasting as it is lovely. FACT: Many installations made over a quarter-century ago are still show places of beauty — enduring testimonials to the good judgment of the architects who specified the top-quality rubber flooring!

NEW CATALOG UPON REQUEST: Write: Goodyear, Flooring Dept. W-8311, Akron 16, Ohio

GOOD YEAR Rubber Flooring

BY THE TILE AND IN YARD-WIDE ROLLS



Today's No. 1 element of PRE-PLANNED

The home of today is the *electrical* home. Regardless of its size, type or design, it must be planned for the *full* electrical life Mr. & Mrs. Homeowner insist upon living these days.

This means efficient, up-to-date, adequate wiring. Wiring that consists of large enough wires, plenty of circuits and outlets, to fill the needs of the future as well as to care for the present!

To plan such wiring naturally takes extra thought, can and foresight on the part of the architect. But it's we worth any additional effort it may require.

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Properly pre-planned wiring goes a long way to poil out the excellence of the houses you design. Because, though wires may be hidden by walls, few things about a house are more evident than the good (or bad!) open tion of its electrical system.



of sound design ...

WIRING

Today's electrically-minded homeowner demands the best of wiring and all it means . . . plenty of power just where and when it's needed for each and every appliance in the house. He will thank you for the functional planning which gives him this extra convenience and value when he buys the house and for years afterward!

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SEND FOR FREE WALL CHART showing typical loads and circuits for home wiring systems. You'll find it a handy check list when planning electrical requirements for any home. Just write Kennecott!

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THE RECORD REPORTS

CANADA (Continued from page 26)

OFFICIAL FAVORS USE OF PRIVATE ARCHITECTS

The Hon. Robert H. Winters, Minister of Canada's Department of Public Works, said recently that the government would continue to rely on private architects; he added that the department hoped to extend its employment of private consultants.

Speaking at a meeting of the Canadian Association of Purchasing Agents in Montreal, the minister said, "By combining the services of private architects and government-employed architects, we have been able to produce a greater volume of work with a minimum of government employees. . . . It is my hope that we can now carry this technique into the field of engineering

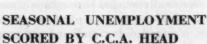


Building news from Quebec: above, the recently completed Caisse Populaire Notre Dame, in Hull, designed by architect René Richard; below: projected extension for the Montreal Children's Hospital (existing building is shaded in the drawing) for which McDougall, Smith & Fleming are the architects — the hospital also plans to build a nurses' home



projects such as wharves, breakwaters, etc., and make fuller use of private consultants in that field."

Concerning the relationship of the government to the building industry, Mr. Winters said that the Department of Public Works can act both as a control and as a stimulator if its work is planned and implemented to the best advantage. "The difference between firmness and slackness in the economic condition of an industry is often not very great," he remarked, "especially where the utilization of tradesmen is concerned. \$100 million of construction superimposed on an industry already working to capacity might cause pressures harmful to the overall economy, whereas \$100 million of work added to the industry at a time when it tends to be a little slack might be just the kind of economic medicine required."



Members of the building industry were urged by Raymond Brunet, O.B.E., president of the Canadian Construction Association, to make an effort to spread construction work more evenly through-(Continued on page 32)



Read Your Favorite Column



As you well know, a lot of chairs are not designed to provide proper posture. Spot X-rays would tell the story.

You will find that the No. 264 New Life Chair was designed with full consideration for the reader's comfortable concentration. The pitch of the back and the improved design of the saddle make it explicitly a reading chair. The 264 Chair will give you life-long satisfaction because,

It Provides Correct and Lasting Comfort



JOHN E. SJÖSTRÖM COMPANY, INC.

1722 NORTH TENTH STREET, PHILADELPHIA 22, PA.



Now in one compact package—the gas-fired water heater of the Industry—the New A. O. Smith Burkay "718": 403 gallons per hour at 100-degree temperature rise, 420,000 BTU per hour—twice the size of former models! Here is a big heater for your big jobs. It opens the door to many new applications for commercial water heating. A real opportunity for you to include this outstanding water heater in your new commercial and industrial building designs. The "718" is another quality product of A. O. Smith research...fully guaranteed. It is ideal for large restaurants, laundries, apartment buildings, swimming pools, industrial plants, and a host of other places.

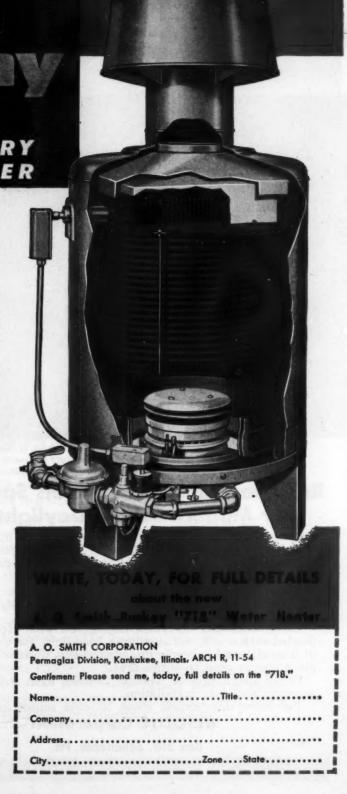
The Burkay "718" has a lot to offer, unmatched in the trade—a water heater with twice the capacity of former models, thereby reducing the expense of multiple heater connections; especially designed as a straight Recovery Heater and for the patented A. O. Smith Booster-Recovery Two-Temperature System. It incorporates in its design the time-tested, exclusive, plus features found in other A. O. Smith Burkay heaters—copper construction for clean, rust-free hot water; sturdily designed for long, service-free life; patented burner, and the special heat exchanger for remarkable operating economy and instant heat response to hot water demands.

It will pay you to see this outstanding new addition at your A. O. Smith distributor or write for full details.

"Plenty of Hot Water Pays All Ways"
Investigate, today, the many advantages of the "Gas Way"
to heat water more quickly with this clean, economical fuel!



PERMAGLAS DIVISION . KANKAKEE, ILLINOIS



THE RECORD REPORTS

CANADA

(Continued from page 30)

out the year. Mr. Brunet cited as an example the government's policy of scheduling its public works to provide maximum employment in the winter.

Pointing out that construction payroll strength in February averages less than three-fourths that of September,



The new factory for Canada Foils Ltd. was recently opened in Scarborough Township, Ont.; architects were Allward & Gouinlock of Toronto

Mr. Brunet suggested that in many types of building construction it should be possible to time framing and wall erection to achieve enclosure by late fall, so that interior work could be done from November through March.

Mr. Brunet also remarked that owners and builders should give more consideration to the economic desirability of winter construction operations.

MILITARY CONSTRUCTION SLATED FOR CUT IN 1955

The amount of military construction will drop by about a third in fiscal 1954-55, it has been announced by R. G. Johnson, president of the government-owned Defense Construction Ltd. Mr. Johnson estimates that his organization's spending this year may drop to \$90,000,000, a decrease of \$45,000,000 from last year's figure. This will be the second consecutive annual decline from the peak of \$220,000,000 reached in 1952-53.

Mr. Johnson says that the reason for this drop is that most of the major Air Force projects are nearing completion.

CONTRACT AWARD FIGURES SHOW DROP IN SEPTEMBER

Construction contract awards for September, which totalled \$180.6 million, dropped \$28.7 million below the total for September 1953, according to MacLean Building Reports. Although residential contracts rose 102 per cent, all other categories showed decreases, the most marked being a 70.1 per cent decline in engineering contracts. MacLean's blamed this fall-off on a lack of large individual projects rather than a general decline in activity.

(Continued on page 36)



Corridor of the new Memorial Park Elementary School in Rockland, Mass., brightly daylighted with a continuous skylight of Resolite translucent structural panels. Architect, Charles E. Cole, 2nd, A.I.A.

Resolite Translucent Panels Specified For Modern School Daylighting

Resolite skylights and sidewalls are installed at half the initial cost of conventional glazing. They eliminate reglazing, since this fiberglass-reinforced, polyester material is shatterproof and crackproof.

Resolite needs no finishing, no maintenance. It resists weathering by heat, cold and moisture . . . is rot-proof and rust-proof.

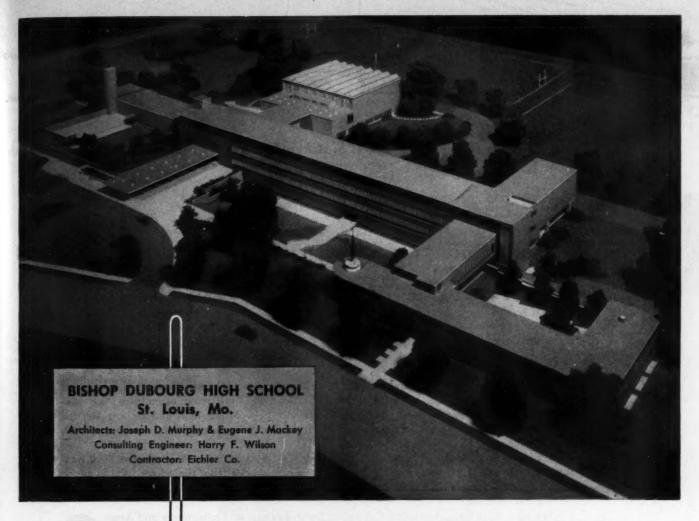
Classrooms and corridors daylighted with Resolite are flooded with a soft, diffused light. This light has a high level of intensity and is evenly distributed (via thousands of tiny glass fibers) over an entire area.

Other advantages of Resolite include: light weight, high strength and easy installation.

For more information about Resolite school uses write:

RESOLITE Corporation

Box 518, Zelienople, Pa.





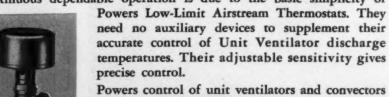
173 POWERS Day-Night Thermostats control 226 valves on Convectors and 69 Unit Ventilators.

Another Outstanding Modern High School

POWERS Controlled

Among the many economical features included in the unique four story \$3,000,000 Bishop DuBourg High School is a Powers pneumatic system of temperature control.

Superiority of Powers Unit Ventilator Control here will not only provide greater comfort but will hold down operating costs. Its continuous dependable operation is due to the basic simplicity of



Powers control of unit ventilators and convectors results in greater comfort and fuel economy. With today's high fuel cost Powers temperature control is a more profitable investment than ever before.

When problems of temperature control arise contact Powers nearest office. Our more than 60 years of experience may be helpful to you.

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Established in 1891 • THE POWERS REGULATOR COMPANY • SKOKIE, ILL. • Offices in Over 50 Cities



Architects: Barron, Heinberg & Brocato General Contractor: J. E. Ratcliff Acoustical Contractor: King & Co., Inc.

Ewell S. Aiken Elementary School, Alexandria, Louisiana

Sound conditioning makes advanced school design practical

The designers of Alexandria, Louisiana's Aiken Elementary School have combined sound conditioning and a unique design to provide improved classroom lighting and ventilation.

Clerestory windows of colored diffusing glass admit light into a corridor along the south side of the building. This light is transmitted into the classrooms through special louvered walls. Since each room is also designed with northern exposure, the result is a well-balanced lighting, free from shadows, high contrast areas, and glare.

The openness of this louvered wall construction might prove highly impractical were it not for sound conditioning. Ceilings of Armstrong Cushiontone Full Random extend from the classrooms through the louvered partition into the corridor. This permits light and air to reach the classrooms, but prevents corridor noises from disturbing busy classes and keeps classroom sounds from building up, too.

Cushiontone is an efficient, low-cost wood fiber acoustical material. Its exclusive "Full Random" pattern of perforations is smart looking and modern, subdues the "tile" effect. Cushiontone has a washable white finish which can be repainted whenever necessary without losing its noise-muffling effectiveness.

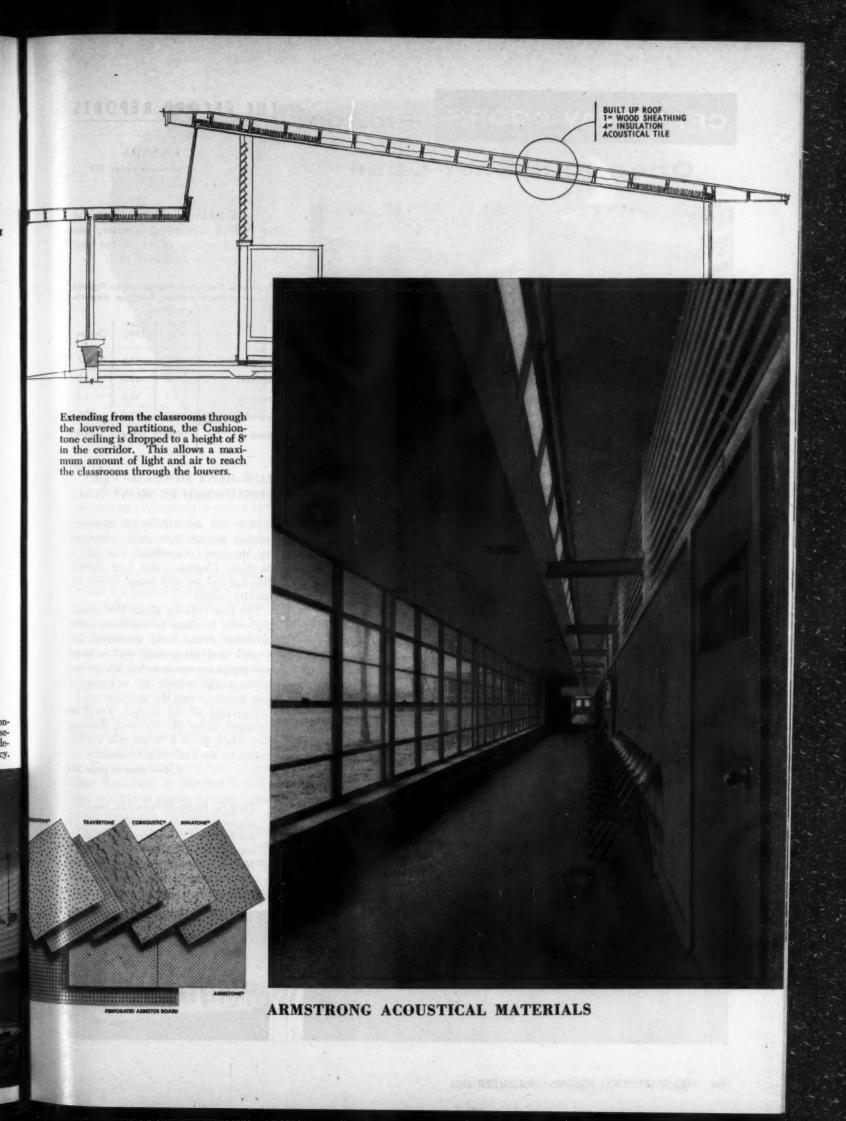
See your Armstrong Acoustical Contractor for full details on Cushiontone and Armstrong's entire line of sound-conditioning materials. For the free booklet, "How to Select an Acoustical Material," write Armstrong Cork Company, 4211 Rock St., Lancaster, Pa.



Low in both material and installation costs, Armstrong Cushiontone is often the choice where strict budgets must be met. Cushiontone's high acoustical efficiency promotes a comfortably quiet atmosphere for study that is beneficial to both student and teacher. Cushiontone's Full Random pattern of perforations produces a continuous ceiling appearance instead of the usual "tiled" effect. Noise-absorbing Cushiontone can also be repainted to blend with any desired interior color scheme without loss of acoustical efficiency.



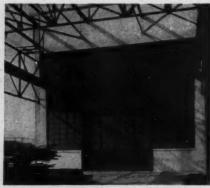




CRANEWAY DOORS Provide

Open and Shut Case





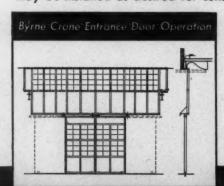
Architect-Albert Kahn Associated Architects and Engineers, Inc. General Contractor-Maxon Construction Company, Dayton, Ohio.

. . . of increased working efficiency and reduction of heating costs!

hen a craneway extends from inside a building to an outside railroad siding or storage yard it's an open and shut case that Byrne can provide the finest in a dependable closure. This craneway opening shown above provides a substantial reduction in heating costs with the added advantage of increased working efficiency.

Byrne crane entrances combine upward acting doors at the crane rails with swinging or sliding doors below. The upper door is always motorized, the lower doors may be specified for manual or motor operation. Interlocks insure complete safety, with automatic or selective controls located as desired.

Crane entrance doors are furnished in steel, or aluminum which is gaining increasing acceptance as a construction material. Windows may be installed as desired for consistent architecture.



For successful development of crane entrance doors, our engineering consultation is furnished without obliga-

FOR INFORMATION

regarding Byrne doors and facilities consult Sweet's Catalog or write direct for our brochure.

BYRNE doors, inc.

THE RECORD REPORTS

CANADA

(Continued from page 32)

The cumulative total for the year at the end of September, however, was still \$85.5 million ahead of the total for the first nine months of 1953.

Contracts Awarded: Comparative Figures Compiled by MacLean Building Reports (in \$ million)

	Sept. 1954	Sept. 1953	Change				
lesidential	89.7	44.1	+45.7				
usiness	56.6	61.5	- 4.8				
ndustrial	10.1	16.8	- 6.6				
ngineering	24.0	87.0	-62.9				
otals	180.6	209.4	-28.7				

LOW-RENT HOUSING PLAN CONSIDERED IN MONTREAL

Plans for an \$18,789,100 low-rent housing project have been submitted by Montreal's Consultant Committee on Slum Clearance and Low Rental Housing and are now being studied by the city council.

The plan calls for about 1300 dwelling units, to range in size from three to seven rooms each; provisions for a park and playground and a large parking lot are also included. Site preparation would require the widening of four streets around the development.

Financing of the project would be arranged under the National Housing Act, which offers a 75 per cent contribution by the Federal government.

(More news on page 38)

Plant for Ruston-Hornsby Ltd., manufacturers of diesel engines, was designed by Toronto architects Wilson & Newton; a British firm, Ruston-Hornsby established itself in Etobicoke Township to take advantage of eased currency control regulations





T is generally agreed that classroom temperatures should be maintained at about 55° overnight and during periods of shut-down in cold weather. This permits quick recovery to comfort conditions and more stable control during the first hours of the next school day.

Cutting off the heat altogether, and letting the classroom temperature drop to 40° or 45°, makes the recovery difficult-particularly in restoring heat to the floor slab, walls, desks, etc.—and leads to morning roomtemperature fluctuations, possible overheating, and abnormal bodily heat losses to surrounding objects.

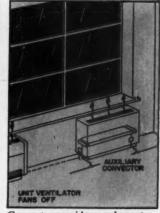
In designing unit ventilator systems to maintain an optimum overnight temperature, either of two methods have been employed: a) operating the units as heaters (recirculation only) under thermostat control; or b) installing supplementary gravity heating with additional piping and controls.

Extensive field tests have proved that when Wind-oline Radiation is integrated with Nesbitt Syncretizers, the combined gravity heating capacity is ample to maintain overnight temperatures of 55° in zero weather. Hence this one system that sets the standard for daytime performance eliminates the cost of separate provision in each room for maintaining overnight temperatures, and simplifies—for greater economy—the control of overnight temperatures from one location in the building.

Get more for your school building dollar . . . go NESBITT.

Send for Engineering Report SL-6.

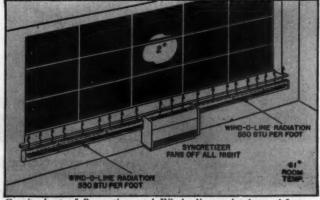




Added controls operate unit fans periodically through the night.

Convector provides supplementary heat, but is not used during day.

ABOVE: THE OLD WAYS-BELOW: THE NESBITT WAY



Gravity heat of Syncretizer and Wind-o-line maintains satisfactory overnight temperatures—without additional equipment or controls.

mcretizer with wind.o.line

MADE AND SOLD BY JOHN J. NESBITT, INC., PHILADELPHIA 36, PA., SOLD ALSO BY AMERICAN BLOWER CORPORATION.

FUNDS PROFERRED STATES FOR SCHOOL CONFERENCES

It's up to the states to make the next move in the Eisenhower Administration's program for solving what Secretary of Health, Education and Welfare Oveta Culp Hobby calls "the grave and complex educational problems" facing the nation, among them, as Mrs. Hobby notes, the "growing shortage" of educational facilities. Governors and chief school officers of all the states and territories have now been officially notified of the Federal grants made available by the last session of Congress under Public Law 530 "to assist each State to bring together, prior to the White House Conference on Education, educators and other interested citizens to discuss educational problems in the state and make recommendations for appropriate action

to be taken at local, state and Federal levels." The grants, apportioning the \$700,000 provided in the law according to population, range from the statutory minimum of \$5000 (Idaho, Montana, New Hampshire, New Mexico, North Dakota, Rhode Island, Utah, Vermont, Wyoming, District of Columbia, Alaska, Hawaii and the Virgin Islands) to \$61,426 (New York). For a state or territory to receive its grant the Governor or his designated representative must "undertake to accept and use the funds authorized."

Neil H. McElroy, president and director of the Procter and Gamble Company of Cincinnati, has been named by President Eisenhower as chairman of the White House Conference on Education to be held in 1955 following the state conferences. An additional \$200,000 was appropriated by the Congress for the White House Conference.

Building Need: \$15 Billion

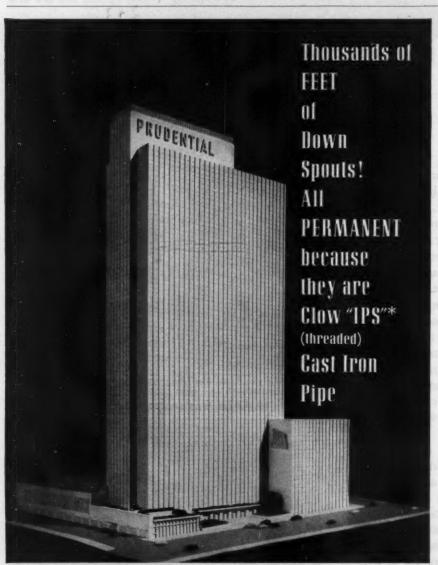
The Administration's conference program was defended by U. S. Commissioner of Education Samuel Brownell in hearings this fall of a House of Representatives education subcommittee headed by Representative Kearns of Pennsylvania. The National Education Association was once more contending that Federal funds must be made available for school building if the 720,000 classrooms and related facilities N.E.A. estimates will be needed during the next five years are to be built.

Commissioner Brownell, acknowledging that an expenditure of \$15 billion will be required to meet even the present deficit of 370,000 elementary and secondary classrooms, reiterated the Administration position that this expense must be met largely by local and state funds.

N.E.A. insisted that sufficient evidence is at hand at all levels of government to prove the need and that legislation should be enacted forthwith without further delay for studies.

"There has been enough fact finding and research," said Rex H. Turner, chairman of N.E.A.'s Legislative Committee. "Enough documents, statistics and charts have been exhibited. It is now up to this subcommittee and Congress to act promptly on legislation which will give our children the schools they need and deserve."

Mr. Turner estimated the current (Continued on page 302)



PRUDENTIAL MID-AMERICA HOME OFFICE, CHICAGO
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GENERAL CONTRACTOR: GEORGE A. FULLER COMPANY.

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- 4 Honeylite allows free air circulation, increases lamp and ballast life up to 33-1/3%

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lighting achieved, is flattering
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able to see our merchandise
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Cyril Magnin, President JOSEPH MAGNIN CO., INC. San Francisco, California

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• ACOUSTIC CELLING AND ROOF DECK. Robertson Q-Deck is as functional as it is attractive. Varying Noise Reduction Coefficients are easily and inexpensively obtained. Write for Acoustic Data on Robertson Q-Deck. Shown is the Cedarville (Ohio) School; John L. Kline, architect.

with

your dollar



• LONG SPAN . . . In addition to its acoustic qualities, Robertson Q-Deck permits longer spans. This means fewer supports, faster installations, lower cost. This is the gymnasium at St. Edward's High School Lakewood, Ohio. George S. Rider Company, engineers.



 BRIGHT CORRIDORS. Daylight is free, so why not use it. Robertson Corrugated Wire Glass Sash is maintenance-free, economical and efficient George Washington School, E. Moline, III.; M. R. Beckstrom, architect.

ROBERTSON products



. ROOFING AND VENTILATION Robertson Ventilators. This modern gymnasium designed by Gregson & Ellis, Atlanta. Ga. shows both of these cost-cutting Robertson products.



ILLATERAL LIGHTING At the St. Thomas Mare School near gara Falls, Onlario l'Arthur B. Scott & Associates, architects) Robertson ights give an assist to sash in classrooms. Robertson **Q**-Deck can be BI LATERAL LIGHTING



CLARELESS OVERHEAD LIGHTING onts or spectators when daylighting is handled like this These bestson Corrugated Wire Glass Skylights at Herbert Moover High



. CANTILEVERED CANOPIES Long span Robertson Q-Deck permits the long averhang desired for covered walkways. This fine example is by Gordon Stafford at his Lincoln (California) High School.



. INSULATED WALLS - QUICK Robertson Q-Panels are dry clean fast construction with unlimited architectural possibilities. Above, they are shown combined with masonry at the Booker T. Washington School at Shreveport, La (Van Os & Flaxman, architects). Below, Q-Panels at the Carmichael School at Richland, Wash (3 Gordon Turnbull, Inc., designer)



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THE RECORD REPORTS

CONSTRUCTION COST INDEXES

Labor and Materials

U. S. average 1926-1929=100

Presented by Clyde Shute, manager, Statistical and Research Division, F. W. Dodge Corp., from data compiled by E. H. Boeckh & Assocs., Inc.

NEW YORK

ATLANTA

Period	Resid Brick	lential Frame	Apts., Hotels Office Bldgs. Brick and Concr.	Commer Factory Brick and Concr.		Resid Brick	lential Frame	Apts., Hotels Office Bldgs. Brick and Concr.	Commer Factory Brick and Concr.	
1930	127.0	126.7	124.1	128.0	123.6	82.1	80.9	84.5	86.1	83.6
1935	93.8	91.3	104.7	108.5	105.5	72.3	67.9	84.0	87.1	85.1
1939	123.5	122.4	130.7	133.4	130.1	86.3	83.1	95.1	97.4	94.7
1940	126.3	125.1	132.2	135.1	131.4	91.0	89.0	96.9	98.5	97.5
1946	181.8	182.4	177.2	179.0	174.8	148.1	149.2	136.8	136.4	135.1
1947	219.3	222.0	207.6	207.5	203.8	180.4	184.0	158.1	157.1	158.0
1948	250.1	251.6	239.4	242.2	235.6	199.2	202.5	178.8	178.8	178.8
1949	243.7	240.8	242.8	246.4	240.0	189.3	189.9	180.6	180.8	177.5
1950	256.2	254.5	249.5	251.5	248.0	194.3	196.2	185.4	183.7	185.0
1951	273.2	271.3	263.7	265.2	262.2	212.8	214.6	204.2	202.8	205.0
1952	278.2	274.8	271.9	274.9	271.8	218.8	221.0	212.8	210.1	214.3
1953	281.3	277.2	281.0	286.0	282.0	223.3	224.6	221.3	221.8	223.0
ine 1954	285.2	278.1	293.6	301.8	295.4	217.2	216.5	221.4	223.4	223.4
aly 1954	285.6	278.3	293.9	302.1	296.6	217.9	217.4	221.5	223.5	223.6
ug. 1954	285.4	278.0	294.1	302.3	296.7	219.3	218.5	224.1	226.1	226.5
Aug. 1954	131.0	% 127.1	increase over 19	9 39 126.6	128.0	154.1	% 162.9	increase over 19 135.6	39 132.1	139.1

ST. LOUIS

SAN FRANCISCO

Aug. 1954	140.9	141.8	ncrease over 123.3	1939	125.3	146.1	% in	crease over 1 126.9	126.1	131.3
Aug. 1954	265.5	258.8	265.1	274.9	268.2	259.9	251.7	266.4	275.7	269.5
July 1954	265.9	259.3	265.2	274.9	268.3	258.5	250.9	264.0	271.9	267.8
June 1954	265.2	258.3	264.3	273.6	265.9	257.2	249.5	263.3	270.8	265.8
1953	263.4	256.4	259.0	267.6	259.2	255.2	257.2	256.6	261.6	259.7
1952	259.1	253.2	249.7	255.0	249.6	250.2	245.0	245.6	248.7	249.6
1951	252.0	248.3	238.5	240.9	239.0	245.2	240.4	239.6	243.1	243.1
1950	232.8	230.7	221.9	225.3	222.8	227.0	223.1	222.4	224.5	222.6
1949	221.4	220.7	212.8	215.7	213.6	213.0	207.1	214.0	219.8	216.1
1948	227.9	231.2	207.7	210.0	208.1	218.9	216.6	208.3	214.7	211.1
1947	202.4	203.8	183.9	184.2	184.0	193.1	191.6	183.7	186.8	186.9
1946	167.1	167.4	159.1	161.1	158.1	159.7	157.5	157.9	159.3	160.0
1940	112.6	110.1	119.3	120.3	119.4	106.4	101.2	116.3	120.1	115.5
1939	110.2	107.0	118.7	119.8	119.0	105.6	99.3	117.4	121.9	116.5
1935	95.1	90.1	104.1	108.3	105.4	89.5	84.5	96.4	103.7	99.7
1930	108.9	108.3	112.4	115.3	111.3	90.8	86.8	100.4	104.9	100.4

The index numbers shown are for combined material and labor costs. The indexes for each separate type of construction relate to the United States average for 1926–29 for that particular type — considered 100.

Cost comparisons, as percentage differences for any particular type of construction, are possible between localities, or periods of time within the same city, by dividing the difference between the two index numbers by one of them; i.e.: index for city A = 110 index for city B = 95

(both indexes must be for the same type of construction).

Then: costs in A are approximately 16 per cent higher than in B.

$$\frac{110-95}{95} = 0.158$$

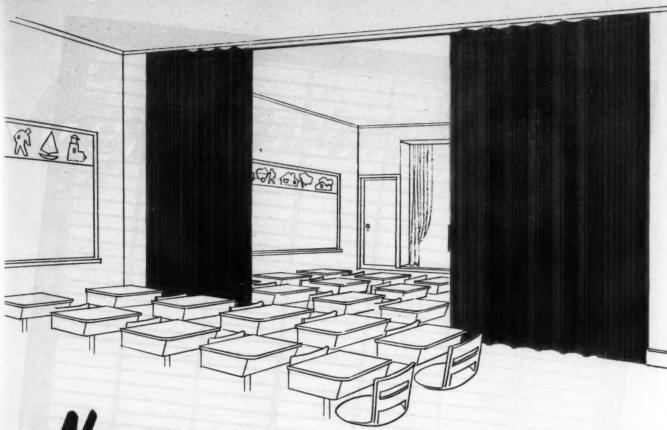
Conversely: costs in B are approximately 14 per cent lower than in A.

$$\frac{110-95}{110} = 0.136$$

Cost comparisons cannot be made between different types of construction because the index numbers for each type relate to a different U. S. average for 1926–29.

Material prices and wage rates used in the current indexes make no allowance for payments in excess of published list prices, thus indexes reflect minimum costs and not necessarily actual costs.

These index numbers will appear regularly on this page.



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Here's a grille that's been especially customed for school and institutional application. It features special built-in durability to withstand gymnasium use and abuse. Made to give long efficient service under the most rugged conditions of bouncing basketballs, baseballs, jarring kicks, and bumps. Has smooth contours, no sharp corners or points. Is safety approved for school use. Is simply so rugged it stops damage and replacement costs.

Clean cut, compact, created to blend with the lines of modern school architecture. Available as grille face only (Model G-1) or grille face with attached volume con-

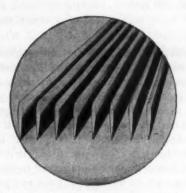
troller (Model G-2).

The Volume Controller features the famous solid sec-

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Noise and turbulence are cut to a minimum. At the same time, perfect, draft-free air distribution is assured.

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 MORE AIR CONTROL PER SQUARE INCH. Close up view of Airfoil volume control louvers. Each blade is individually adjustable. Concealed louver support eliminates mullions and butted construction.

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INTEGRATION IN THE SCHOOLS

The Negro and the Schools. By Harry S. Ashmore.* The University of North Carolina Press (Chapel Hill, N. C.) 1954. $8\frac{1}{2}$ in. by 11 in., 291 pp.

Reviewed by SAM T. HURST

In a field where knowledge and perspective are the beginning of tolerance but where emotion and tradition are overpowering, Mr. Ashmore has contributed a reference book for the great debates already raging and yet upcoming. This is not a controversial book, even though the writer suggests that the "recording of change can itself be controversial when emotions cancel out the laws of logic." Rather it is compelling in its objectivity, even perhaps dry in its devotion to statistics. It is, however, an encouragement to those who recognize that segregation as we know it must end but live so close under the shadow of white supremacy that the weight of contrary opinion becomes overwhelming.

Dedicated as he is to "bridging the world of ideas and the world of men through journalism" the author presents with clarity and without visible bias, the findings of more than forty scholars whose data are the essence of this work. It is to be hoped that some other host of dedicated men might bridge the gap between this book and the citizen, White and Negro, in whose heart, vote and pocketbook lies the ultimate answer to the problem of The Negro and The Schools.

Sponsored by the Fund for the Advancement of Education with the object of taking "a new and comprehensive look at the structure of bi-racial education in the United States," the project summarized by this book went forward in 1953 under the direction of the author, Harry Ashmore, and Philip Hammer.

Owen J. Roberts, former Associate Justice, United States Supreme Court and Chairman of the Board of the Fund states the principle of the study "not to undertake to argue the case for or against segregation in public education and in no sense become involved as an advocate on either side of the issues before the Supreme Court." Howard Odum, Professor of Sociology, University of North Carolina, John Griffin, Director of Community Educational Services, Emory University, Atlanta, and scholars of like stature gave to the Administrative and Field Staff of the project the quality of research necessary to insure the achievement of its high aim. Impartiality and objectivity notwithstanding, it is inevitable that this work lends the weight of evidence and the precedent of experience to support of the Supreme Court decision and the argument for integration in the public schools of the

nation. Thus, I surmise it will be a source of comfort to some and a body of fact to be conveniently ignored by others.

From the earliest attacks on its legality in 1849, bi-racial education is traced through civil war, reconstruction, world war, depression and industrialization. Always segregation is seen as a moral problem, hedged about by strong determinants, economic, social, legal and geographical. Largely, though not exclusively, it is shown as a Southern problem with Negro density and the legacy of deep feelings making it acute.

A landmark in legalized separation was the Plessy vs Ferguson case, 1896, which established by Federal sanction the "separate but equal" principle. As the public school system grew, "separate" was the doctrine while "equal" was forgotten.

For the recent effort toward equal but separate educational facilities the author credits a liberalizing of Southern attitudes, the influence of the church, and a coincident decade of liberalism in national politics. He quotes Ralph McGill, editor of the Atlanta Constitution: "Christianity cannot well afford to be on the wrong side of a moral force as it was in some areas when it defended slavery." I believe it should be made clear that these changing Southern attitudes have lain dormant lacking expression except under the stimulus of legal pressure. It is evident that expressions of this attitude came from many church conferences only after the Supreme Court ruling.

This book is a history, not a prologue. It does not predict the outcome of "private school" plans in the Southern states or of uneasy integration in other states. It does leave the reader with a statement of the issues of this day together with some essential facts which will help determine our direction:

- 1. "Certainly no white Southerner can ignore the abundant evidence that the walls of racial segregation are crumbling under persistent internal and external pressures. Yet the dominant white Southern attitude towards the process remains negative."
- 2. "The ratio of Negro to White population is not a final determinant of racial attitudes but it is perhaps the most powerful single influence for the practical results of de-segregation depend heavily upon it."

(Continued on page 48)

^{*} See NEWS section page 24

General Electric trained experts help Washington builder "custom-fit" air conditioning to needs of each floor



NEW 14-STORY OFFICE BUILDING at 1413 K Street, NW, Washington, D.C. A 15-ton G-E packaged air conditioner on the first floor, 7½-ton G-E units on the next three floors, and one 10-ton G-E conditioner on each of the top 10 floors provide dependable air conditioning throughout the entire building. Designer-builder: J. B. Shapiro. Contractors: Shapiro Engineering Corporation. Consulting Engineers: General Engineering Associates.

Floor area alone is just the beginning when it comes to criteria for determining the amount of air conditioning to provide, and the best location for supply units. That's why J. B. Shapiro, Washington designer-builder, asked his local G-E air conditioning contractor to help him plan the "weather" for Washington's first 14-story office building. G-E trained experts took into consideration all the detailed factors that account for heat gains and losses-even exposure to sunlight, elevator traffic, and nature of tenants' businesses -before making recommendations that resulted in effective, low-cost air conditioning for each floor.

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Quality in appearance and performance have been designed into the new Far-a-matic clock controlled systems. Far-a-matic systems are available to meet all requirements—ranging from control units equipped with program mechanisms that operate signals, lights, utilities, etc.—to models designed for the smallest clock system.

The small compact master control units house all regulating and power supply mechanismsno additional equipment required except on very large installations. All Far-a-matic systems feature two-wire operation and hourly supervision with all clocks controlled in unison. A twenty-four-hour spring reserve in most control units assures uninterrupted supervisory operation. Far-a-matic system, modern designed unit clocks, are built with the exclusive *Plug-in feature for convenience and economy of installation. Write for a copy of the Far-a-matic clock system catalog.

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BELLS . CLOCKS BUZZERS . HORNS CHIMES VISUAL AND AUDIBLE PAGING DEVICES AND SYSTEMS

REQUIRED READING

(Continued from page 46)

3. "Finally there is the hard fact that integration in a meaningful sense cannot be achieved by the mere physical presence of children of two races in a single classroom. No public school is isolated from the community that supports it, and if the very composition of its classes is subject to deepseated and sustained public disapproval it is hardly likely to foster the spirit of united effort essential to learning. Even those who are dedicated to the proposition that the common good demands the end of segregation in education cannot be unaware that if the transition produces martyrs they will be young children who must bear the brunt of spiritual conflict."

Reading between the lines of THE NEGRO AND THE SCHOOL one feels all the tensions of a great problem and comes perhaps to understand the patience, moral courage and personal sacrifice required for its solution.

PLANNING SCHOOL BUILD-INGS FOR THE WHOLE CHILD

"Indiana and the Midwest School Building Planning Conference Proceedings." Bul-Planning Conference Proceedings." Bulletin of the School of Education, Indiana University, vol. xxx, nos. 5 and 7. Division of Research and Field Services (Bloomington, Ind.) 1954. 6 in. by 9 in., 123 pp, \$2.00

This bulletin presents the proceedings of the 1954 Indiana and the Midwest School Building Planning Conference the theme of which was "Planning for the Whole Child." The conference covered two major problems: Reorganization of School Districts and The Psychological Environment, and included speeches by 22 members of the education, publishing and architectural professions, on such topics as "the need for large sites," "the community concept of school reorganization," "visual appraisal of design factors" and "low-cost school buildings."

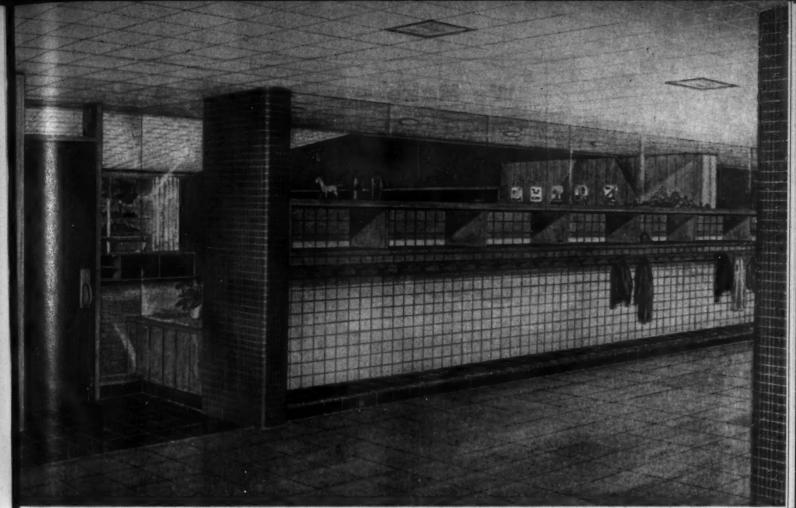
"AIRCHITECTURE"

Climate and Architecture. By Jeffrey Ellis Aronin. Reinhold Publishing Corp. (New York, N. Y.) 1953. 8½ in. by 11 in., 304 pp, illus. \$12.50

Airchitecture" is the designation which the author assigns to the designing and orienting of buildings with respect to climate. Good architecture, he asserts, must be concerned with the air, which has so much to do with making the climate in which we live.

In discussing the problem of designing buildings that are in harmony with the

(Continued on page 354)



Design for a modern school corridor by Perkins & Will, Architects and Engineers

"Clay Tile... Modern Answer for Durability, Easy Care and Smart Design" PERKINS & WILL PERK

Perkins and Will's attractive design for a school corridor vividly demonstrates clay tile's unbeatable advantages.

Glazed wall tile is always a wise choice for use in an opentype locker arrangement like this. Just one swipe of a damp cloth removes sticky fingermarks and smudges. Richly colored ceramic mosaic tile on piers adds a smart decorative note, keeps maintenance costs at a minimum. And your clients will appreciate quarry tile for heavy traffic areas because it resists a lifetime of abuse, yet remains clean and attractive with minimum janitor maintenance. When you design or build any commercial, institutional or residential project, remember clay tile's qualities—because clay tile will reflect good judgment by providing lasting satisfaction for your client.

When it comes to color and design possibilities, the range of today's clay tile colors, shapes and types gives you the widest range of any modern building material. Clay tile never fades, burns, stains or needs refinishing. This means your clients can figure their first cost as their last cost—because clay tile installations are a lifetime proposition.

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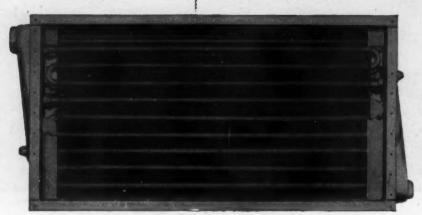
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LIGHT CONTROL

Think of dawn and dusk... of morning changing night to noon, of evening fading into night. These are



the effects you can achieve in your homes—and other buildings, too—with new LUXTROL Light Control! For LUXTROL gives **controlled** lighting, an entirely new concept in modern design. No more ordinary "on-off" switches. No more all-or-nothing lighting. LUXTROL creates at the touch of a dial **any level of light from dark to full-bright**... the perfect level of light for every occasion, every activity, every mood. Think of the decorative possibilities, the functional flexibility. And remember: LUXTROL is Underwriters' Laboratories Approved and made by a leading manufacturer of lighting control systems—at a surprisingly low price. Better make a date now for a LUXTROL demonstration. Simply call Western Union Operator 25 in your own city and ask for the name of your LUXTROL distributor.



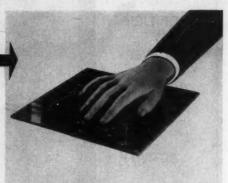


...proof for your clients



the touch test

A mere touch convinces clients of the value of Super-Density. This exclusive feature of B. F. Goodrich Rubber Floor Tile provides a smoother, non-porous surface, which clients can feel, and makes floors easy to clean and keep clean.



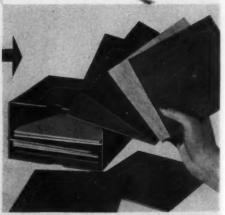
the step test

A step on B. F. Goodrich Rubber Floor Tile dramatizes the difference that *Natural Resiliency* makes . . . gives assurance of a lifetime of quiet comfort underfoot.



the beauty test

Show the 26 Beautiful Colors of B. F. Goodrich Rubber Floor Tile. Let your clients see how they harmonize and blend with any decor... how they make possible scores of attractive designs and color combinations.

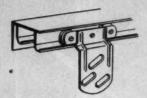


specify

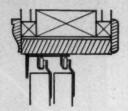
B. F. Goodrich Rubber Floor Tile... backed by the famous research of B. F. Goodrich — First in Rubber. For B. F. Goodrich aids for architects, write: Dept. A11, B. F. Goodrich Co., Flooring Division, Watertown 72, Mass.



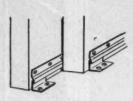
RUBBER TILE . ASPHALT TILE . KOROSEAL TILE . RUBBER COVE BASE . ACCESSORIES



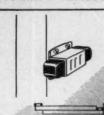
SATIN FINISH ANODIZED
ALUMINUM TRACK WITH APRON
... ADJUSTABLE HANGERS
WITH NYLON ROLLERS



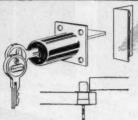
STANDARD DOOR FRAME . . . TRACK APRON SERVES AS TRIM . . . ONLY 1" HEADROOM



No. 876 GUIDE STRIPS SAVE TIME, CUT COSTS . . . ELIMINATE GROOVING DOORS



No. 885 DOOR CUSHIONS
PROTECT FINGERS AND
PREVENT SLAM



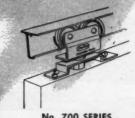
No. 1058 SLIDING DOOR LOCK FOR BY-PASSING DOORS



No. 1036 SLIDING DOOR LOCK FOR POCKET DOORS



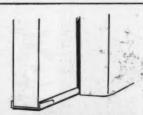
No. 1100 SERIES
POCKET DOOR T-FRAME . . .
ALL STEEL . . . WARP PROOF



No. 700 SERIES TRACK AND HANGERS DESIGNED FOR POCKET DOORS



SLIDING DOOR SET FOR SIDE ENTRANCE DOOR IN HOME GARAGES



ALUMINUM GUIDE STRIP ATTACHES TO BOTTOM OF DOOR ... GUIDES DOOR INTO POCKET



means

Quality

Sterling

sets the
standard in
sliding door
hardware

Through extensive research and engineering, Sterling has pioneered and perfected many new ideas which simplify and improve sliding door installations.

Sterling is the most imitated sliding door bardware.

Pictured on this page are a few of the products recently introduced by Sterling. The new locks for by-passing and pocket doors and the new T-Frame and hardware for pocket doors embody many basically new ideas.

Builders everywhere depend on Sterling Hardware for advanced design and trouble-free operation.

Specify Sterling Hardware for your sliding door installations.



STERLING HARDWARE MFG. CO.

CHICAGO 18, ILL.

SEE OUR CATALOG IN SWEET'S: Architectural File • Light Construction File

VISIT OUR DISPLAYS:
Architects Samples Corporation, N. Y. C.
Chicagoland Home Building Center, 130 W. Randolph St.

STAINLESS STEEL FOR BUILDINGS

McLouth STAINLESS Steel

For the product you make today and the product you plan for tomorrow.

McLouth STEEL CORPORATION

Manufacturers of Stainless and Carbon Steels

Leading Manufacturers of Fluorescent Tubes say:

No one knows better the value of CERTIFIED CBM BALLASTS than the manufacturers of fluorescent tubes. For the satisfactory performance of their lamps is vitally dependent on the ballasts that operate them. Here's what they say:

CHAMPION says:

"Fluorescent lamps are designed to operate at specific electrical values. The use of auxiliary equipment that has been proven to meet these agreed upon standards will assure the user maximum value for his lighting dollar with a minimum of operational failures. Certified Ballasts are inexpensive insurance."

GENERAL ELECTRIC says:

"The life and light output ratings of fluorescent lamps are based on their use with ballasts providing proper operating characteristics. Ballasts that do not provide proper electrical values may substantially reduce either lamp life or light output, or both. Ballasts certified as built to the specifications adopted by the Certified Ballast Manufacturers (CBM) do provide values that meet or exceed minimum requirements. This certification assures the lamp user, without individual testing, that lamps will operate at values close to their ratings.

Tailored

SYLVANIA says:

"The light and life ratings of fluorescent lamps are based on three hour burning cycles under specified conditions and with ballasts meeting American Standards Association specifications. Ballasts marked with the CBM emblem and certified by Electrical Testing Laboratories, Inc., meet ASA specifications."

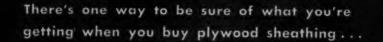
WESTINGHOUSE says:

"Use ballasts that are tested and Certified by Electrical Testing Laboratories or ones that are otherwise known to meet the specifications of the lamp manufacturer. These will give best results with Westinghouse fluorescent lamps."

By using fluorescent fixtures that are equipped with CERTIFIED CBM BALLASTS you are assured long lamp life, full light output and trouble-free operation.

That's why CERTIFIED CBM BALLASTS merit the slogan-Tailored to the Tube.





LOOK FOR THIS DFPA

Be safe—be sure! Insist on genuine DFPA trademarked sheathing engineered to meet exacting structural requirements.

When you buy grademarked, trademarked PLYSCORD, you're getting strong, durable Douglas Fir plywood sheathing that's quality tested by DFPA* to protect the buyer.

DFPA: Douglas Fir Plywood Association is non-profit industry organization devoted to produc research, promotion, and quality maintenance

NEW: A handy slide rule giving thickness and nailing recommendations for Plyscord sheathing on various stud, joist and ratter spacings. Free Write DFPA, Tacoma 2, Washington



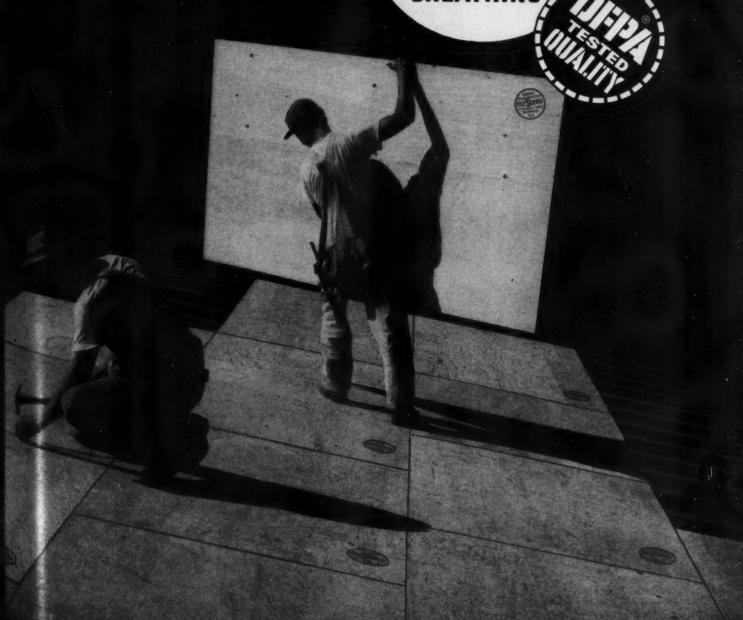
TRADEMARK!

GENUINE DOUGLAS FIR PLYWOOD

PLYSCORD

INTERIOR TYPE GRAD

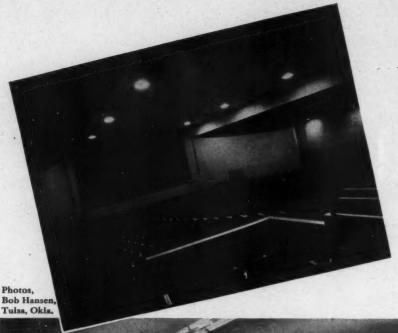
SHEATHING



GRADED



by school executives everywhere



PRATT & LAMBERT PAINTS and VARNISHES rate a top grade with school executives from coast to coast. They are favored because of their original beauty and because experience has proven that their exceptional durability and long life mean greater maintenance economy. For exterior or interior work - for walls, woodwork and floors - Pratt & Lambert Paints and Varnishes meet every need of any school or college. Whatever your work - institutional, commercial or residential, a Pratt & Lambert Architectural Service Representative is always available to assist in specification writing and color planning.



PRATT
PRATT

PRATT & LAMBERT-INC.

A Dependable Name in Paint since 1849

NEW YORK . BUFFALO . CHICAGO

FORT ERIE, ONTARIO



tainless steel goes to school...

Architects and builders are using increasing quantities of stainless steel for new schools. Its use is justified, not only in terms of appearance, strength and long life, but in lower maintenance costs.

Crucible Rezistal® stainless steel withstands weather and abuse, and is easy to keep bright and clean. That's why it's being used all through the school building - inside and out - for door and window frames, stairways and railings, kick plates,

trim, hardware, gutters and downspouts - even beading for stucco or plaster. And, of course, stainless is ideal for cooking rooms, chemical labs, drinking fountains, and cafeterias.

You save space and weight, too, when you use stainless steel, for you can use lighter sections without any loss of strength. Let us work with you on stainless applications. Call Crucible for the full story of how stainless has gone to school.



CRUCIBLE first name in special purpose steels

54 years of Fine steelmaking STAINLESS STEELS

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA. REX HIGH SPEED . TOOL . REZISTAL STAINLESS . MAX-EL . ALLOY . SPECIAL PURPOSE STEELS

The <u>smart</u> way to make modern exits <u>safe!</u>

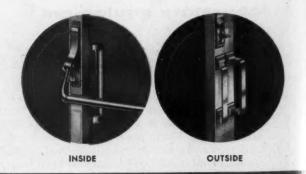
Yon Duprin NC Narrow Concealed Exit Devices

● For single or double door exit installations—wherever modern is the mode and narrow stile doors the plan—always insist on Von Duprin Narrow Concealed Exit Devices.

Von Duprin NC Exit Devices are reversible, spring actuated. Vertical rods slide smoothly, efficiently and quietly within hollow stiles. Inside and outside trims accentuate the feeling of lightness—enhance the smart, modern design. And over all, the quality construction, precision engineering and superior finish assure you of the durability and year-in, year-out performance that is synonymous with the name Von Duprin.

Whatever your exit installation problem, you may be sure that the complete line of Von Duprin exit devices and auxiliary hardware can help you provide "the safe way out!" Check today with your nearby Von Duprin "Exit Specialist"—a factory

representative or selected hardware distributor. If you don't know his name write direct to the factory.



Check these NC features

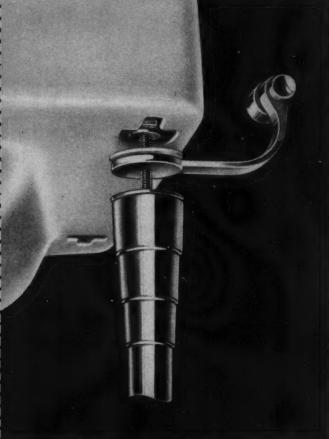
- all bronze
- crossbar X-Bar reinforced
- drop-forged internal parts, lever arms, exterior control and trim
- reversible—for doors of either hand
- Approved by Underwriters' Laboratories, Inc. for accident hazard





VONNEGUT HARDWARE CO. . VON DUPRIN DIVISION 402 WEST MARYLAND STREET, INDIANAPOLIS 9, INDIANA





TWO-BOLT CLOSET can cut your costs. Bolts are precisely positioned to assure rigid anchorage of the closet WITHOUT CLOSET SCREWS. This can save time, especially on concrete slab construction.

QUICK FITTING LEGS AND TOWEL BARS incorporate a unique key-slot design which allows easy "slip-in" installation. No cumbersome, time-consuming wall brackets or special bolt-on devices are needed.

Here are two more BRIGGS ENGINEERING FEATURES designed to speed your installations!

BRIGGS PLUMBING WARE IS DESIGNED TO IMPROVE INSTAL-LATION. The two features shown above, along with those listed at the right, can eliminate those installation bottlenecks—speed up production! Needless parts have been removed at no sacrifice in quality. Assemblies have been engineered to make installations simpler. And you can be sure of long service and lasting customer satisfaction, too!

Always insist on dependable Briggs Beautyware. You'll save time, trouble and money.

CHECK THESE OTHER ENGINEERING ADVANTAGES

- Rigid-frame tub construction makes it free standing . . . needs no wall support.
- Wall-surface tub and shower fitting really fits . . . solders quickly.
- Jiffy pop-up lavatory drain is installed in 4 simple steps.
- Tub drains require no cutting to fit any regularsized tub.

BRIGGS MANUFACTURING COMPANY . DETROIT 26, MICHIGAN



WHERE SUDDEN DARKNESS CAN BE COSTLY

... install Exide Lightguard emergency units!

CERTAIN VITAL AREAS should never be plunged into sudden darkness due to power failures. These can result from a few minutes of unexpected darkness: Injuries caused by panic. Wide-spread pilferage. Damage to property.

ADEQUATE LIGHTING PROTECTION is the answer, and is as essential to safe operation as is adequate fire and police protection. When lights go out, Exide Lightguards go on, instantly, automatically! They maintain illumination, keep vital functions going, and can be used to supplement and extend the value of built-in emergency lighting systems.

FLEXIBLE, PORTABLE Lightguard units can protect secondary critical areas at the lowest cost. They plug into any 115-volt outlet, eliminating extensive re-wiring. Older buildings can be modernized with these latest UL-approved emergency lighting units. New buildings can use Exide Lightguards where running wires from a central system would be unnecessarily expensive.

DEPENDABLE EXIDE BATTERIES used in Lightguard units have been developed for the utmost in positive protection, exceptionally long life, quick and easy maintenance. Lead-acid batteries have advantages over other types of batteries: their available power is easily determined—and they are readily recharged. Their true cost is low.

For more lighting protection at low cost with less maintenance, specify genuine Exide Lightguard protection. Call your Exide sales engineer for full details, or write for latest literature.



Your best buy for emergency lighting! The New Model M has a two rate charger—high rate or trickle. After the emergency, automatic controls recharge the Exide battery. UL-approved. Plugs into any 115-volt outlet.



LONGLIFE EXIDE BATTERIES

have been used for years to supply low cost power for all types of emergency lighting systems, for 6-volt, 32-volt and 115-volt installations. For help in determining what type of system to install, specifications, call on Exide.

Exide-Lightguard

FOR EXAMPLE ... IN STORES



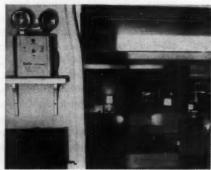
PREVENT PANIC by guaranteeing that exits and firetowers will be brightly lighted in case of power failure. Single and double lamp Exide Lightguards are available; each lamp illuminates up to 10,000 sq. ft.



STOP PILFERAGE, protect valuable merchandise against theft during minutes of darkness. Stores that maintain guards or detectives should support them with an emergency lighting installation. It pays!

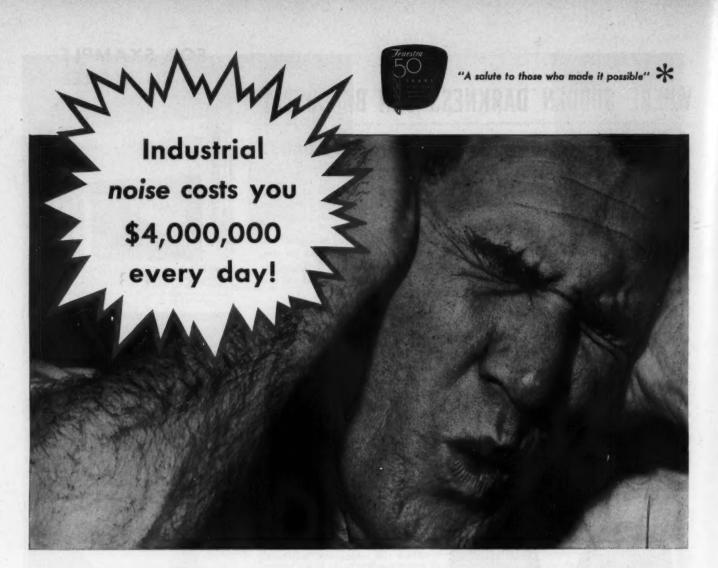


MAINTAIN COMMUNICATIONS from vital nerve centers. Telephone switchboards, power boards need dependable lighting to be most effective in time of danger. Less than a cent a day will insure against light-failure!



RESTORE SERVICE to normal, repair the damage quickly. Instant, automatic lighting from a well-placed Exide Lightguard reduces hazards, protects personnel and property without fumbling for a switch.

Exide INDUSTRIAL DIVISION, The Electric Storage Battery Company, Philadelphia 2, Pa.



You know all the losses industrial noise can bring —worker fatigue, absenteeism, labor turnover, accidents—\$4,000,000-a-day worth! But you can avoid them if you keep one basic idea in mind when you plan your building.

It's a wonderful new building idea called Fenestra* Acoustical Holorib that forms a combination acoustical-structural roof.

And it costs as little as 75 cents per square foot ... installed!

In one compact unit you get: (1) perforated, heavy, 18-gauge Holorib Steel Deck, which provides a smooth-finished, metal-faced interior ceiling (2) sound-absorbing element which also provides efficient heat insulation (3) strong steel surface for support of 1" rigid fiberboard insulation and finished roofing.

Holorib is lightweight. It saves you building time, labor, materials and money. It's almost maintenance-free but, if you want to, you can wash or paint it time after time without cutting its acoustical efficiency a bit. And it is noncombustible!

There is no comparable building material. That's why you'll find Acoustical Holorib Roof Deck in the General Motors Technical Center, Warren, Michigan; Standard Pressed Steel Company, Jenkintown, Pennsylvania; Simmons Saw & File Gempany, Fitchburg, Massachusetts, and many other modern structures.

Write today for complete information—or have your architect write—and check on Fenestra floor panels and wall panels. Fenestra Metal Building Panels speed building and lessen the need for structural steel. Write E. A. Miller, Manager, Building Panel Division, Detroit Steel Products Company, Dept. AR-11, 2252 East Grand Boulevard, Detroit 11, Michigan. *Trademark

Fenestra

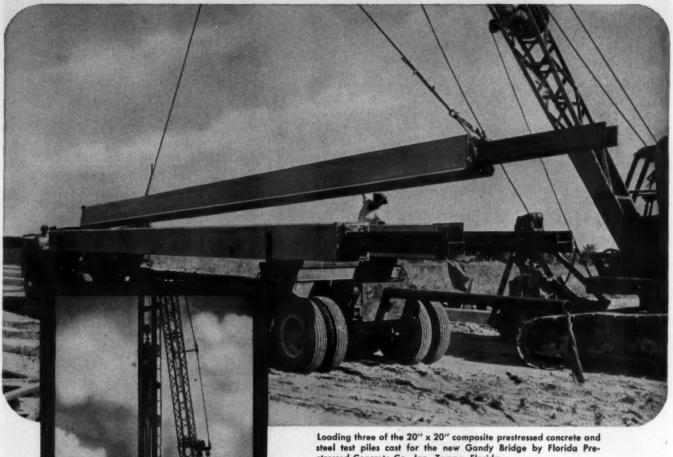
METAL BUILDING PANELS

* You

Your need for a maintenance-free, noncombustible, built-in accustical treatment encouraged us to develop Fenestra Accustical Structural Building Products.



NOW-PRESTRESSED CONCRETE PILES OPEN ANOTHER BIG MARKET



stressed Concrete Co., Inc., Tampa, Florida.

ONE OF THE NEWEST DEVELOPMENTS in the precast, pre-tensioned concrete field is piling. Such piling has already been used for several bridges, and is now under consideration or contract for several more. Illustrated above, for instance, are composite test piles designed for the new Gandy Bridge* which will form another connection between Tampa and St. Petersburg, Florida. 30 feet long by 20 inches square, these piles have a 10-inch sonovoid hollow, and a steel H beam bottom tip extending into and beyond the end of the pile. The steel tip is sometimes added to pierce the rock strata peculiar to some areas of Florida.

The tensioning elements employed are Roebling % inch diameter, 7-wire stress-relieved Prestressed Concrete Strands, and the initial prestressing force is 151 tons.

Roebling engineers, who have led in the development of prestressing techniques and tensioning elements in America, are always ready to cooperate with you to help assure top results on any specific prestressed concrete application. Write Construction Materials Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

*Designed by the Bridge Division of the State Road Department of Florida.



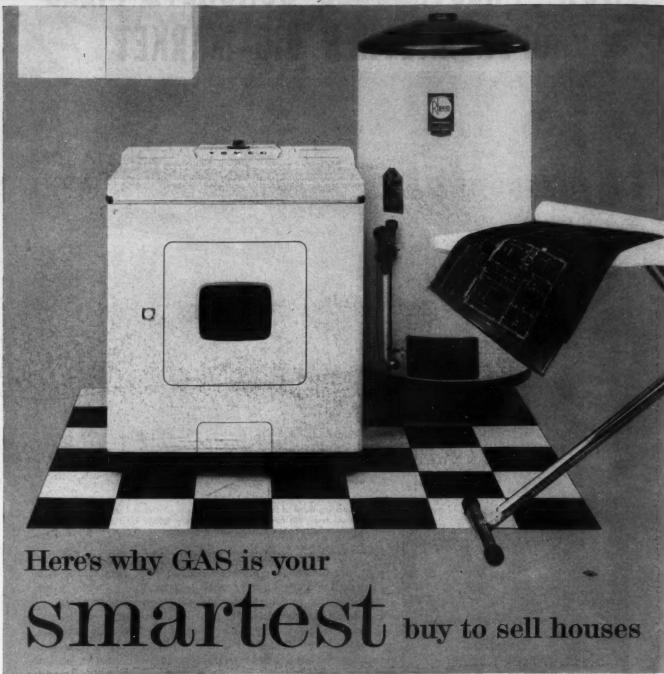
designed by Lakeland Engineering Associ-ates of Lakeland, Florida and produced by R. H. Wright & Son, Fort Lauderdale, Florida.

one point pick-up — proving the pile's ex-treme strength, If a reinforced concrete pile were lifted in this manner it would buckle



Subsidiary of The Colorado Fuel and Iron Corporation

This New Freedom Gas Laundry* features a TEMCO automatic Gas dryer and a RHEEM COPPERMATIC automatic Gas water-heater. Cabinet by REPUBLIC STEEL.



*Reg. A. G. A.

- Sales records give Automatic Gas Water-Heaters a 2.8 edge over any other heater run by an all-automatic fuel. Gas does a better job — actually replaces hot water 3 times faster.
- Gas water-heaters offer every product advantage you can think of. For example, the one shown is particularly strong and long-lived. It features a rust-proof copper tank inside a "pressure-proved" steel tank.
- An automatic clothes washer (and what modern home doesn't have one?) definitely needs the speedy recovery rate of a Gas heater.
- Yet automatic Gas water-heaters cost less to buy, install and use.

- Automatic Gas Clothes Dryers are preferred 30-1 by professional launderettes because of speed and economy of operation.
- No warm-up period means that Gas dryers are twice as economical per load.
- Good choice of brands gives chance to select individual features.
- Dryer in home as standard equipment eliminates need for drying yard, allows for smaller lots and neater-looking developments.

AMERICAN GAS ASSOCIATION

Your local Gas company will be happy to work with you on any problem. Only

Gas

is so fast...

so thrifty

GAS—the modern fuel for automatic cooking, refrigeration, water-heating, house-heating, air-conditioning, clothes-drying, incineration.



Cyrus L. Baxter, Arch. Jack E. Hodell, Assoc., DeWitt Wood Products Formica Fabricator Erected by Ferro Concrete Construction Co. all of Cincinnati, O.

EMPHASIS THROUGH RESTRAINT

Combine the inherent beauty of a rich Formica woodgrain with clean simple lines of good design and you have a building interior that is at once business-like and friendly, combines dignity with warmth.

Appeal of this interestingly simple Formica interior is not limited to the esthetic.

The spiraling cost of maintenance man hours makes rugged, easy to clean Formica a practical investment in low up-keep.

For more information on Formica see Sweets Architectural File 13a or write

DEMAND THIS CERTIFICATION

This mark certifies genuine FORMICE STREET OF Pays in Performance by Pays in Performance by

Socing is believing. If this wash-off identification is not on the surface, it's not FORMICA.

THE FORMICA COMPANY

4632 Spring Grove Ave., Cincinnati 32, O.

In Canada: Arnold Banfield & Co., Ltd. Oakville, Ontario

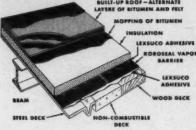


LEXSUCO ANSWERS FOR TODAY'S ROOFING PROBLEMS



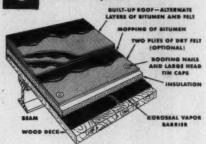
Fire-retardant vapor-resistant uses self-locking Lexsuco Clips

Over steel, concrete or wood deck . . . Koroseal Vapor Barrier



fire-retardant vapor-resistant uses fire-safe Lexsuco Adhesive

Over wood deck . . . Koroseal Vapor Barrier



- vapor-resistant Fire-retardant wses standard nails and tin caps

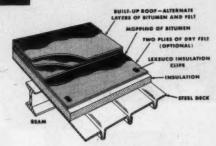
Modern requirements for built-up roofing demand improved fire resistance and greater vapor impermeability -and Lexsuco answers the problem with its new roof designs featuring Koroseal Vapor Barrier.

Lexsuco Roof Constructions are fire-retardant and vapor-resistant; can be applied over any type roof deck; utilize standard built-up roofing; can be specified with or without a vapor barrier; and provide superior roofing at no more cost than conventional roofing.

Koroseal Vapor Barrier is a tough, elastic sheet that gives excellent resistance to vapor transmission and will not contribute burnables to a plant fire below. Other Lexsuco innovations include Lexsuco Clips and Lexsuco Adhesive for high-strength, non-inflammable fastening of Koroseal and/or insulation to deck.

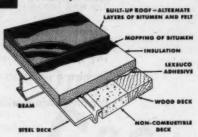
Analyze the five Lexsuco roof designs presented here . . . then specify "Lexsuco Roof Construction" for all your built-up roofing applications-it's yours at no extra cost.

Over steel deck . . . no vapor barrier



wses selffire-retardant locking Lexsuco Clips

Over steel, concrete or wood deck .. no vapor barrier



fire-retardant w uses firesafe Lexsuco Adhesive

for the construction industry

Engineered

products



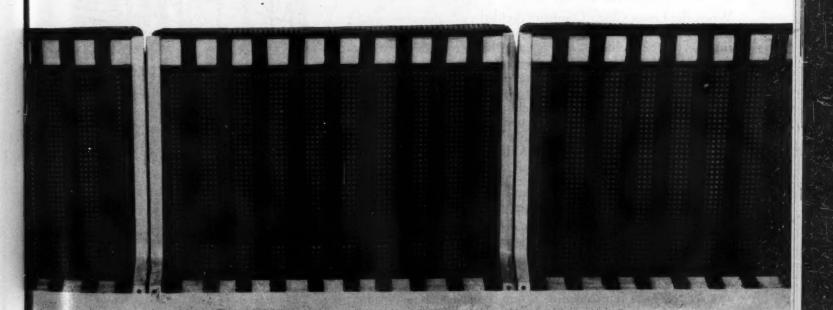
For a new bulletin containing technical data and specifications on Lexsuco Roof Constructions, write: Lexsuco, Incorporated, 4813 Lexington Avenue, Cleveland 3, Ohio. INCORPORATED

St El









Distinguished . . . and eminently practical . . . seating by George Nelson for residential, institutional or public areas. Steelframe base in four, six and eight foot lengths. Seating units (upholstered in foam rubber, covered with fabric or Elastic Naugahyde) and hard plastic table surfaces may be combined and re-combined to suit your clients' changing needs. Write to Dept. AR-114 for your free copy of our new Steelframe Seating folder.



Lenox China Company's new 143,000-sq-ft plant, with attached administrative building, in Atlantic County, New Jersey.

Plenty of Natural Daylight in Lenox China's New Plant

... AND THIS BUILDING IS READILY EXPANDABLE, THANKS TO THE RUGGEDNESS OF STEEL WINDOWS

When the Lenox China Company decided to double their production capacity by building a new plant near Atlantic City, N. J., they asked the architects to meet two basic requirements in the design. First, to provide plenty of natural daylight, a "must" for gilding and other intricate hand operations that go into the production of fine china. Second, to provide for plant expansion.

H. F. Everett & Associates, of Allentown, Pa., the architects, filled both requirements by specifying commercial projected steel windows. Glazed with tinted glass, these windows reduce glare, but allow all the natural light necessary. When the time comes to expand, the rear window-wall of the four-bay plant can be removed, other bays added, and the windows re-installed. Tough on the windows? Of course — but sturdy steel windows can take it!

Whatever type of designing or building you do—industrial, commercial or residential—you can do it better with steel windows. Thanks to steel's strength, steel windows give more light and more ventilation than other types of window—and are far more rugged.

A wide selection of steel windows in all standard types and sizes is available locally. Check with your building supply dealer, or contact the local representative of any reliable, nationally-known manufacturer of steel windows.

For many years, manufacturers of fine steel windows have used solid, hot-rolled sections of open hearth steel made by Bethlehem.



MAXIMUM DAYLIGHT — These highly-skilled craftsmen are gilding fine china, an intricate job that requires excellent natural lighting. Only steel windows have slender but strong framing members that permit maximum daylight and maximum ventilation. See Sweet's File 16b.

BETHLEHEM STEEL COMPANY BETHLEHEM, PA.

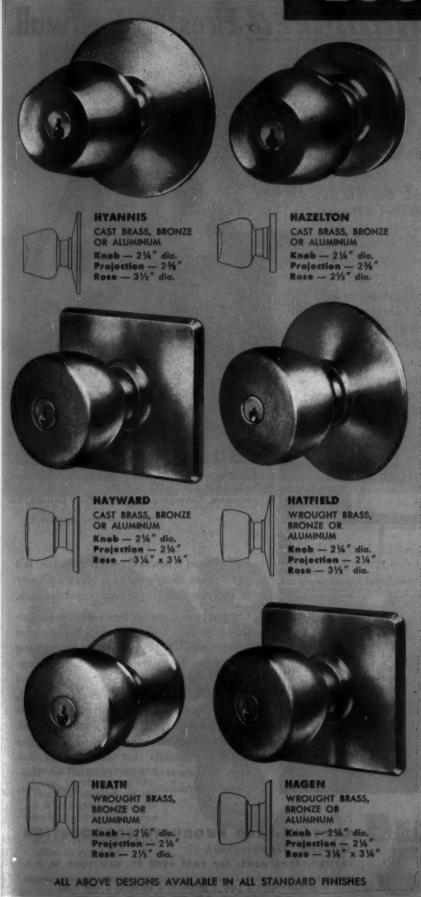
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BUILD FASTER ... SELL FASTER WITH

STEEL WINDOWS



LOCKWOOD



presents



DISTINCTIVE NEW DESIGNS

for heavy duty applications

Here is new beauty for a distinguished line of heavy duty locksets . . . Lockwood's 'H' series. Three of these handsome new designs have cast trim and three have wrought trim. All six are available in all standard finishes.

Hyannis and Hazelton are outstanding examples of the grace and freshness of design which Lockwood has achieved. Their unique knob shape combines beauty with practicality, for it is as comfortable to the grip as it is appealing to the eye.

The new rose designs take full advantage of the modern preference for simple, practical forms and are in perfect keeping with the best of contemporary architecture.

In beauty, ruggedness and smoothness of performance, these six designs more than meet the high standards for which Lockwood has long been recognized as the leader in the heavy duty field.



LOCKWOOD HARDWARE
MANUFACTURING COMPANY
Fitchburg, Mass.

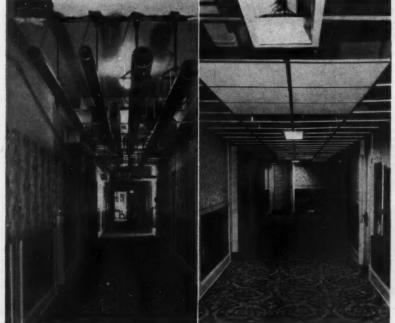
Southern Hotel Gets Triple Bonus Using <u>Certain-teed</u> Firestop Bestwall.

Fire Resistance Plus Ease of Application and Less Inconvenience During Construction Important Factors in This Air-Conditioning Job

Guests at the Piedmont are safe as well as cool, thanks to the air-conditioning installation. Over 25,000 square feet of Firestop Bestwall Gypsum Wallboard was specified for all corridor ceilings—covering the air-conditioning ducts—because of its great resistance to fire, ease of application, and because it meant less interference with hotel operation during remodeling. An interesting construction feature: Bestwall panels are left loose in the steel channels (see cut) to give easy access to air-conditioning ducts and to telephone and other wires. Certain-teed Firestop Bestwall was the first gypsum wall-board to meet Code requirements for one-hour fire resistance over both wood and steel framing in single layer application. Firestop is much more fire resistant than ordinary gypsum wallboard. And it's stronger and more resistant to sound transmission.



Piedmont Hotel, Atlanta, Ga. Air-conditioning installation by Acousti Engineering Co., Atlanta, Ga., Cary B. Gamble & Associates, Consulting Engineers, New Orleans, La.



Builders get a bonus from Firestop too. It's light—cuts cleanly—and is quick and easy to apply, making for a neat remodeling job. Certain-teed Firestop Bestwall is manufactured under Underwriters' Laboratories service and has been accepted by building officials in more than 200 cities. Recommend it for both new construction and remodeling... for any type commercial, institutional or residential building. Wherever one-hour fire resistance is required, Firestop Bestwall is one of the most effective building materials that can be used. Ask your Certain-teed representative for complete information, or write direct now.

Certain-teed

Quality made Certain... Satisfaction Guaranteed



CERTAIN-TEED PRODUCTS CORPORATION

ARDMORE, PENNSYLVANIA

EXPORT DEPARTMENT: 100 EAST 42ND ST., NEW YORK 17, N.Y.

ASPHALT ROOFING • SHINGLES • SIDING • ASBESTOS CEMENT ROOFING AND SIDING SHINGLES GYPSUM PLASTER • LATH • WALLBOARD • SHEATHING • ROOF DECKS FIBERGLAS BUILDING INSULATION • ROOF INSULATION • SIDING CUSHION

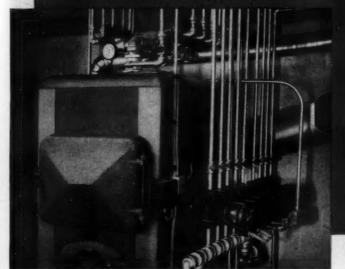


HIS OWN
WEATHER-MAKER

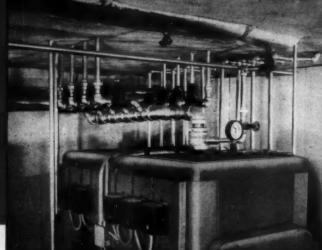
on Marita Brown, Oak Park, Illinois a Contractors Allied Heating Company

BaG Hydro-Flo Heating

provides individual temperature control for



Nine B & G Boosters, individually controlled by room thermostats, circulate bot water to each zone.



B&G Flo-Control Valves, installed in the supply mains, prevent an override in temperature when the Boosters shut off.



seller in the field.

Some like it warm, some like it cool...but in this apartment building, B & G Hydro-Flo Heating keeps everybody happy. Each tenant can have the temperature considered most comfortable—and raise or lower it at will!

The building is divided into nine zones, each equipped with a thermostatically controlled B & G Booster and a B & G Flo-Control Valve. Economy of operation as well as comfort is achieved, since zoning permits compensation for differences in exposure, solar effect and temperature preference.

When you install a B & G Hydro-Flo Forced Hot Water System, you've laid the groundwork for the most modern comforts and conveniences. You've provided better heating ... uniform temperature—warm floors—draftless rooms. You've assured fuel economy and the convenience of low-cost, all-year domestic hot water. Snow-melting and summer cooling equipment can be added at any time.

Send today for Booklet FS-953.

BELL & GOSSETT

Dept. DQ-32, Morton Grove, Illinois
Canadian Licensee: S. A. Armstrong, Ltd., 1400 O'Connor Drive, Toronto, Canada



Before Gropoint, loop pile didn't have enough tuft bind to keep tufts from pulling out under the heavy abuse of commercial traffic.

Then along came Bigelow with its Lokweave® process to give loop pile the strongest tuft bind in the industry! The special compound applied to the back locks in every tuft and forms a selvedge on every edge. Woven or damaged parts may be removed and easily replaced.

Gropoint still holds the position it captured when first introduced: it remains the *standard* for store and office use.

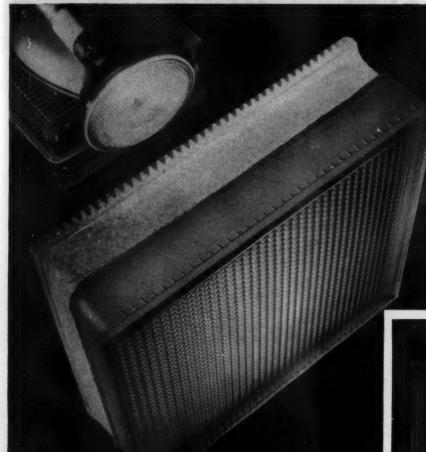
Gropoint is an excellent example of Bigelow's unending research to produce carpets that lead in versatility and serviceability...the reason why Bigelow continues to be the number 1 name in carpets.

Bigelow



Number 1 name in Carpets

look closely..



you can
See
the
secret of
Suntrol

In the top photograph, you can see how the green Suntrol screen reduces the light intensity from the lamp. The outer half of the Suntrol Block is bright, but *inside*, on the room side, the raw light is softened and diffused until it's easy on the eyes.

The other photograph tells more of the story. You can see the green, fibrous glass diffusing screen (1) that filters the light and divides the block into two insulating cavities. You can see the internal prisms cast into every Suntrol Block (2) that direct the light upward or diffuse it according to the pattern selected. Lastly, you can see the exclusive PC Soft-Lite® Edge (3), of opal glass that eliminates glare through the edge of the block.

Suntrol Blocks reduce brightness 35%, and instantaneous heat gain by 25% compared with

standard glass blocks. If you have an unusual location where glare and heat are a problem, it will be to your advantage to learn more about these remarkable Suntrol Blocks — available exclusively from Pittsburgh Corning. For complete information, write to Pittsburgh Corning Corporation, Dept. C-114, One Gateway Center, Pittsburgh 22, Pennsylvania.

PC Suntrol* Glass Blocks



ALSO SKYTROL® AND FOAMGLAS®

*T. M. Reg. Applied For

The most convincing stamp of user satisfaction

now another Ford Plant



Ford Foundry, Cleveland. Architects and Engineers: F. A. Fairbrother and George H. Miehls. Consultants. Albert Kahn Associated Architects and Engineers, Inc., Detroit. Heating Contractors: Smith and Oby Co., Cleveland.

equipped with Sarco heating specialties

8 Ford Plants now rely on Sarco dependability

To get repeat business it takes more than just promises of product performance . . . it takes proof.

For the past fifteen years Sarco product performance has been proved seven times over to the Ford Motor Company. Now the new Cleveland Foundry is the eighth Ford plant to be equipped with Sarco Heating Specialties. Over 7,000 steam traps, strainers, radiator valves and traps and other Sarco Specialties give dependable, efficient service in all eight plants. Doesn't this repeat business speak for itself?

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Here's why so many architects, engineers and heating contractors specify and install Sarce

- -job after job.
- Proven dependability
- Trouble-free service
- Complete line from one reliable manufacturer
- Nationally known
 and preferred

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Water



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ALL 14 BUILDINGS in Rockefeller Center, New York City, have floors reinforced with American Welded Wire Fabric. This high quality fabric comes in prefabricated rolls, wound on large mandrels in any said you need.



FACTORY FLOORS—pounded day after day by heavy traffic and vibration—need the extra protection of American Welded Wire Fabric.

It's American Welded Wire Fabric for the strongest concrete.

 Don't worry about the strength or durability of your concrete work if you reinforce it with American Welded Wire Fabric, American Fabric doesn't just meet the new ASTM Specifications A185-53T; it often exceeds them. It assures you an extra margin of safety in concrete walls, floor slabs, driveways and roofs, whether they are pre-cast or poured at the job site.

We make sure our fabric is the best quality by rigid inspections that check size and spacing of wires, soundness of welds, and strength of the finished product. This assures you high quality concrete work that is just as strong and crack-resistant as you designed it.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION, GENERAL OFFICES: CLEVELAND, OHIO COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS

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EVERY TYPE OF REINFORCED CONCRETE CONSTRUCTION NEEDS

USS AMERICAN WELDED WIRE FABRIC



Lobby of the 1000-Room Sheraton-Gibson Hotel, Cincinnati, Ohio

Courtesy of The Sheraton Corporation of America

Plan on floors that win compliments

...plan on Flexachrome

Specify flooring that your hotel clients like to have around all the time . . . flooring that livens up the place and pays its own way from the second it is installed.

FLEXACHROME* flooring!

Flexachrome Vinyl Plastic-Asbestos Floor Tile really "dresses up" a lobby, corridor or restaurant. The aristocrat of resilient flooring, Flexachrome tile comes in 28 unusually sharp, brilliant colors and 5 different sizes . . . giving you almost unlimited versatility for design and pattern.

And remember this about Flexachrome: it is highly resistant to greases, acids and alkalies.

As far as stamina is concerned: hotel guests can walk on it year after year... dance on it to their heart's content... with a minimum of scuff or wear.

Flexachrome is a cinch to keep clean, too...thanks

to its smooth, tight, close-textured surface. Just sweeping and periodic washing are required. No waxing needed unless high gloss is desired.

So look in the classified pages of your telephone directory for your Tile-Tex* contractor. He'll show you all the colors and sizes, tell you about how quickly Flexachrome is installed. Or, look us up in Sweet's Files.

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Tile-Tex—Pioneer Division, The Flintkote Company, P. O. Box 2218, Terminal Annex, Los Angeles 54, California

The Flintkote Company of Canada, Ltd., 30th Street, Long Branch, Toronto, Canada



TILE-TEX... Floors of Lasting Beauty

FOR SCHOOLS-FACTORIESPUBLIC TOILETS



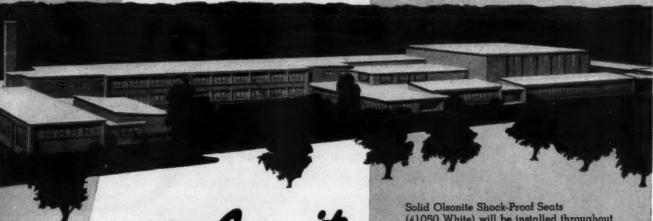
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They Stay White For A Lifetime of Normal Use—Never Need To Be Replaced!

Now you can specify white seats for all schools, hotels, factories... all public buildings, without fear of discoloration. Independent research laboratory tests prove that New Olsonite White Shock-Proof Seats will not yellow—even after years of service. These tests also show that Solid Olsonite Shock-Proof Seats have five times the impact strength of ordinary solid seats.

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Olsonite's complete catalog is available on request.

Please write on your letterhead to:

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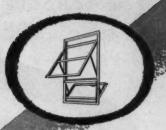
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IS YOUR NEXT WINDOW REQUIREMENT FOR

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Whichever it is, we've good reason to believe there's a Ware window that'll suit your needs to a "T". Why? Because Ware engineering and quality standards have proved their value to so many others, in so many varied applications.

Why not get all the facts for yourself? Our sales engineering staff is ready to assist you on special problems—and our regional ware-housing system provides overnight service to most cities. Write Dept. R-11



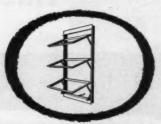
Projected



Casements



Econ-O-Ware Awning



Intermediate Awning



Jalousie



Econ-O-Wall

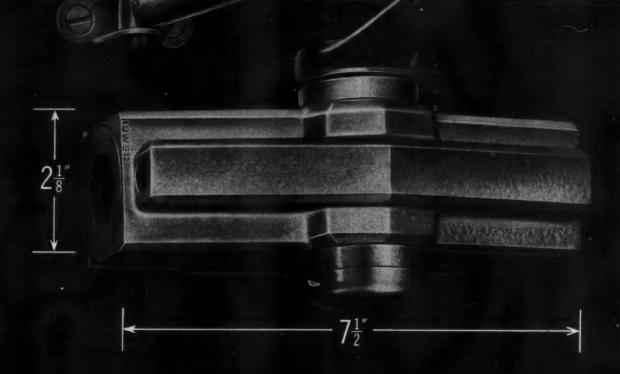




Ware Laboratories, Inc., 3700 N.W. 25th St., Miami, Florida

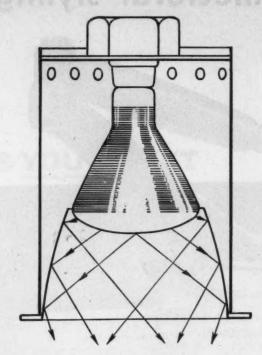
MEMBER OF THE ALUMINUM WINDOW MANUFACTURERS ASSOCIATION

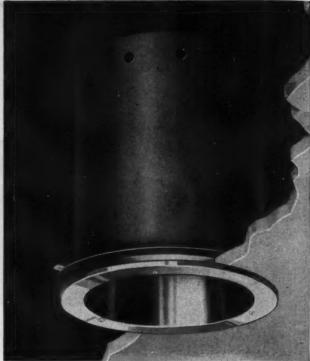
NOW!...compact, architectural styling in DOOR CLOSERS by SCHLAGE



he new Schlage hydraulic door closer contains the lasting durability and unexcelled engineering that has always been identified with Schlage locks. Its compact case contains a precision rack-and-pinion mechanism, fully tested to give perfect door control. The Schlage closer brings to the building industry improved design, simplified controls for adjustment, and easier installation to meet a variety of conditions without sacrificing headroom or appearance.

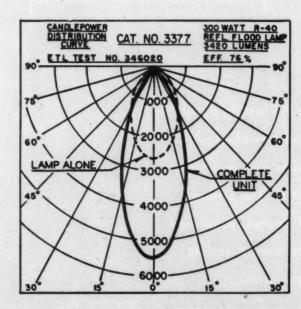






Patent Pending

DOUBLES LIGHT OUTPUT



Unsurpassed performance and comfort in incandescent lighting is achieved by this recessed Elipticone Light Multiplier.

95% of the light output is directed below 45°. Wasteful glare-zone light is converted into useful work-zone light. As a result, effective light intensities are doubled or operating costs are halved.

So complete is the shielding that, in normal viewing positions, a dramatic unawareness of the light source results.

The inverted reflecting surface is selfcleaning. Relamping is through bottom opening by hand or with lamp changer.

Full data on the unit is on page 25 of the ART METAL catalog. Write for a copy.



Manufacturers of Engineered Incandescent Lighting



The world-renowned Waldorf Astoria Hotel in New York is like a host of other important buildings in one respect: It depends upon p-k copper-lined water heaters for an unfailing supply of clean hot water.

The Waldorf is a city within a city-10,000 people filling 2,200 guest rooms and public halls. Always instantly on tap is an abundant supply of rust-free hot water from p-k copper-lined storage heaters.

A p-k copper-lined heater is a complete copper heater inside of a sturdy steel shell. It combines the non-corrosive qualities of copper with the great strength of steel.

If you're interested in *true* economy, p-k copper-lined are your logical choice. They outlast ordinary heaters. They assure enduring trouble-free operation. They require only routine maintenance.

For trouble-free, rust-free hot water-year after year-

LOOK FOR THE p-k Copper Lining

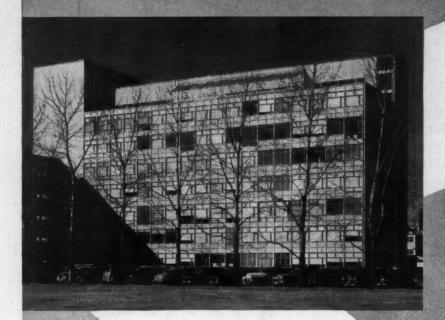
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The new Dorrance Laboratory of Biology and Food Technology Massachusetts Institute of Technology Cambridge, Massachusetts

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DURIRON for corrosion resistance at M.I.T.

Duriron was the choice for the extensive waste disposal system on all the floors of M.I.T.'s new John Dorrance Laboratory because of the corrosive solutions to be handled.

Architects specify Duriron Acidproof Drain Line because they know it meets the requirements of corrosion resistance and will generally outlast the building.

Duriron is a high silicon iron which resists most corrosives, as well as erosion and abrasion throughout the entire wall thickness. It is installed by ordinary plumbing methods.

Duriron pipe and fittings are available from stock in principal cities. Duriron Catalog PF/4 gives physical characteristics and complete details. Specify Duriron—Insist upon Duriron.



THE DURIRON COMPANY, Inc.
Dayton, Ohio



Vina - Lux ... makes better school floors





Architects are designing school buildings today that are far more effective in

answering the problems of education at costs that mean greater value to the school community. Many new and better building materials are contributing to these more efficient school plants.

Vina-Lux vinyl-asbestos tile has been designed to give the school architect a new type of flooring that performs better in this new type of school. Vina-Lux is easier to walk and work on, is made in new light-reflecting colors that harmonize with modern school décor, is much simpler to clean and keep clean, and

has a much longer life. Over a period of years, Vina-Lux floors cost less per square foot per year and give greater satisfaction in every respect.

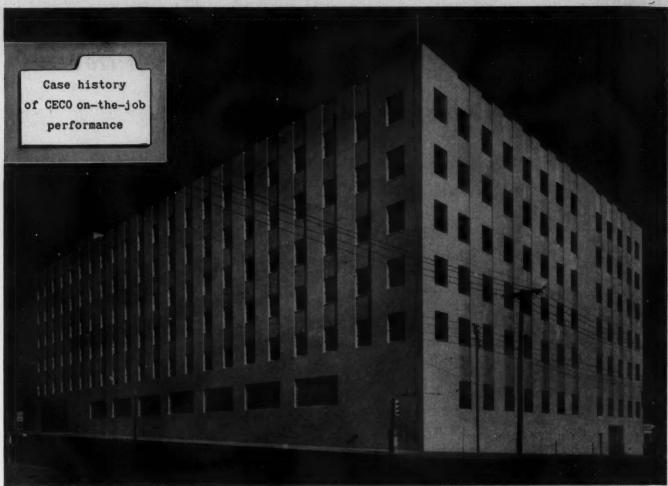
Why not investigate this better answer to your school floor problems? Ask us to have a qualified representative come in and discuss with you all the facts about Vina-Lux — America's leading vinyl-asbestos tile. No obligation, of course.

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Sinclair Building, Tulsa, Okla./Architect, Hugh R. Humphreys

How Ceco Aluminum Windows solved two architectural problems...

makes the big difference

Achieving striking architectural effects draws upon the imagination of the architect . . . adapting products to realize the design poses another problem. Architect Hugh R. Humphreys found the solution for Tulsa's new Sinclair Building in Ceco-Sterling Aluminum Double-Hung Windows. An unusual building design was created through the use of aluminum panel spandrels . . . Ceco Aluminum Windows were a perfect complement to the spandrels and likewise met the air conditioning problem. A simple but effective tie was made between the window and air conditioner cover. Ceco engineers helped develop the economical yet positive sill anchor. Architect Humphreys gives another reason why Ceco Aluminum Double-Hung Windows were used: "Their stainless steel weatherstripping holds air infiltration to a minimum." Ceco Aluminum Windows need no painting ... will outlast CECO ENGINEERING

The construction products

In the cots to the cots to

CECO STEEL PRODUCTS CORPORATION

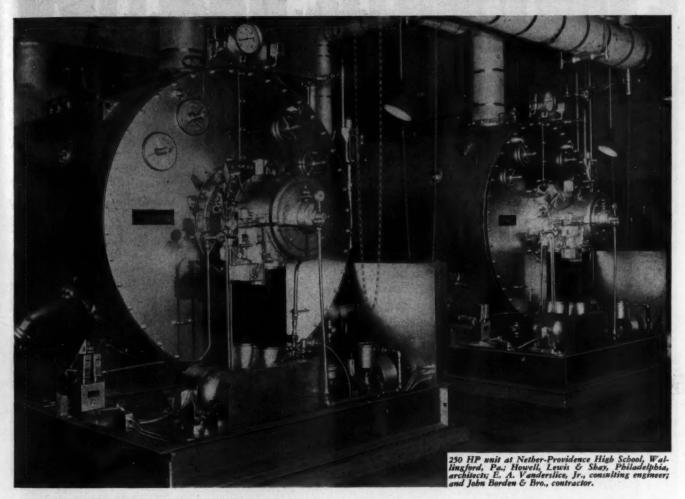
Offices, warehouses and fabricating plants in principal cities. General Offices: 5601 West 26th Street, Chicago 50, Illinois

any structure. Next time call Ceco

Product Specialists to help solve your

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at SCHOOLS and COLLEGES



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All OVER AMERICA, steam and hot water requirements for public and parochial schools, private schools, trade schools, and colleges are being supplied by Powermaster Packaged Automatic Boilers . . . with an outstanding record of reliability and economy. Why have they been so widely "accepted" in educational circles by men who can evaluate the aptitude of boilers for this particular kind of service? Because by all standards of comparison, Powermasters possess these qualifications for "enrollment" in any kind of school: Ease and economy of installation-space-saving compact- PACKAGED AUTOMATIC BOILERS ness-fuel-saving smokeless combustion-fuel- In sizes to 500 HP; pressures to 250 psi.

saving operation at all loads-maintenancesaving accessibility—completely automatic operating and safety controls-minimum attention of service personnel.

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What material could be better for effecting an honest and reasonable transition between old forms which have stood the test of time and new forms built to endure. The timelessness of Marble is one of its many virtues. It defies old age, laughs at the elements, resists hard usage, maintains its inherent beauty while other inferior materials are deteriorating with time.

Marble endures.

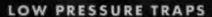
And Marble is economical, as has been CON-**CLUSIVELY PROVED** in two important bulletins: "Proof That Marble Costs Less . . . "; "Further Proof That Marble Costs Less . . . ". These are available without charge. Address requests to Department FS.

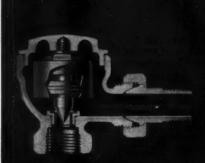
*Shariwaggi: "A word from India describing the art of picturesque composition in combining new architecture with old so as to enhance both". Architectural Forum, February, 1954.

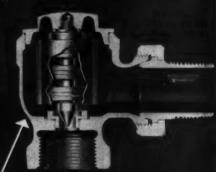
Photo: Exra Stoller MARBLE ILLE INSTITUTE OF AMERICA, INC. Federal Reserve Bank, Detroit Smith, Hinchman & Grylls, Inc., architects and engineers Minoru Yamasaki, design consultant

HOFFMAN STEAM TRAPS

FOR LOW, MEDIUM and HIGH PRESSURES



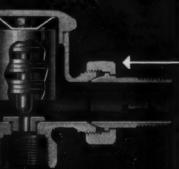




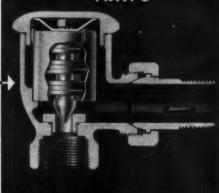
MEDIUM PRESSURE TRAPS

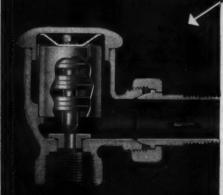
REPAIR PARTS

HIGH PRESSURE TRAPS



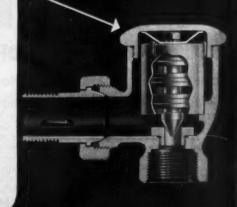




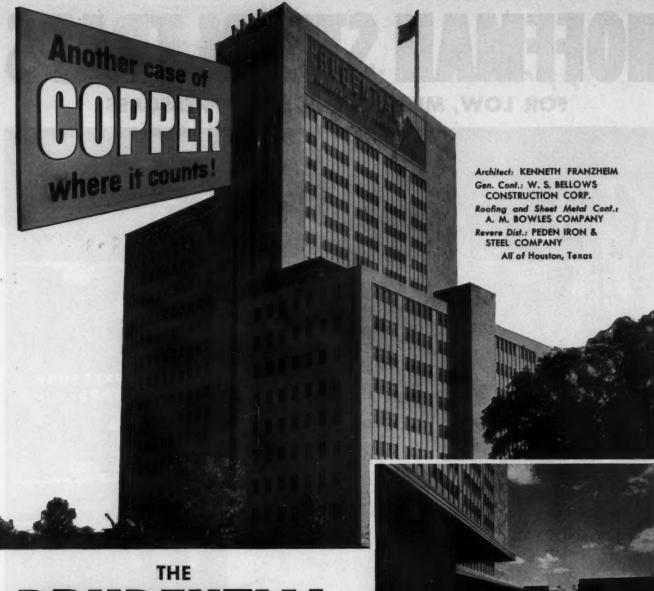


Here is your quick accurate guide to selection of parts needed for the profitable repair or replacement of Hoffman Thermostatic Traps. Includes listing of parts for discontinued series. Write for your free copy today.

Hoffman offers a complete line of Low, Medium and High Pressure Thermostatic Traps with uniform guarantee of quality and precision workmanship. A full range of sizes and capacities assures you the correct trap for service with radiation, dryers, sterilizers, mangles, cookers and similar uses. Body, cap, nut and tail piece are of high quality brass. Other features of design contribute to long life.



STEAM



PRUDENTIAL

INSURANCE COMPANY OF AMERICA

Southwestern Home Office, Houston, Texas

Here is still another case of the most modern of buildings depending on man's oldest metal to seal out the elements. Metals may come and metals may go but the enduring qualities of copper have remained unmatched for centuries. There is not another metal or alloy that has all of the outstanding construction characteristics of copper. It is equally at home in the most ancient cathedral or in the newest streamlined skyscraper. It's adaptability in construction and flexibility in design make it the metal preferred by architects.

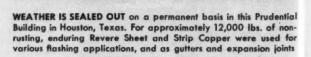
all of the outstanding construction characteristics of copper. It is equally at home in the most ancient cathedral or in the newest streamlined skyscraper. It's adaptability in construction and flexibility in design make it the metal preferred by architects.

That's why, on structures built to last, such as the new Prudential Building, you'll find Revere Copper used as flashing, as gutters, in expansion joints, as roofs and in other vital spots where unerring performance through the years is of utmost importance to the reputation of the architect and the satisfaction of the client.

Copper cannot rust or rot. Its design possibilities are unlimited. Its endurance has been proved for centuries. The enviable reputation copper has earned makes it readily acceptable by the toughest board

Copper cannot rust or rot. Its design possibilities are unlimited. Its endurance has been proved for centuries. The enviable reputation copper has earned makes it readily acceptable by the toughest board of directors. Contractors prefer to work with it because it solders beautifully, requires no special tools, is readily worked into any shape or form and is readily prefabricated in the shop. Write us today about the money-saving advantages of Revere Keystone Thru-Wall Flashing* and the new Revere-Keystone 2-Piece Cap Flashing.** And, if you have technical problems, we will put you in touch with Revere's Technical Advisory Service.

Patented**Pat. Pend.



Inset photo directly above shows where Revere Copper was used to flash the planting box (left) and the stone parapet where it joins the roof (right).



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230 Park Avenue, New York 17, N. Y.

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New Design * ELESCOPIC GYM SEATS

Medart sets the highest standard for all telescoping seats. Let your own comparison prove their superior value.

A NEW CATALOG tells all ... write for YOUR COPY

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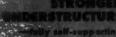
22" or 24"

2 ROW DEPTHS

72 rows for maximum seating in minimum space; 24° rows for ext

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mere rugged than ever.
Wood parts give <u>additional</u>
strength. 4 vertical
sprights support each row—
give destrolled distribution
of load over entire
Recovered.



LIGHTER

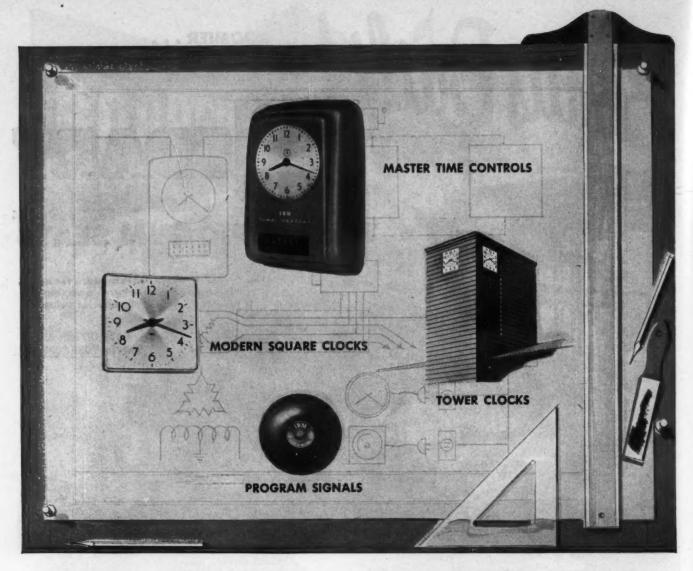
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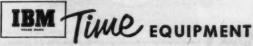
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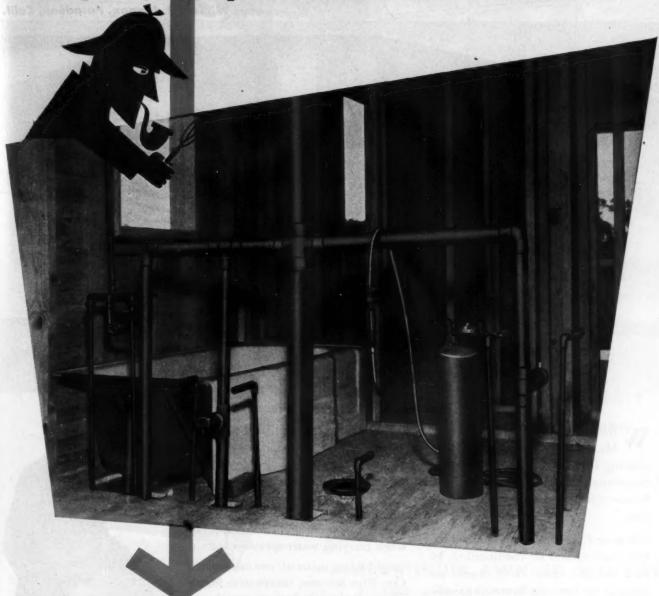


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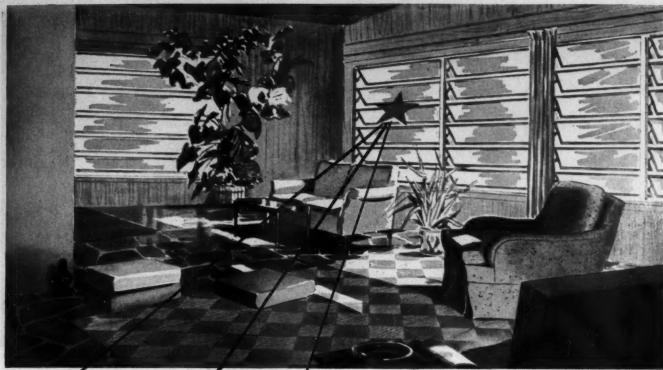


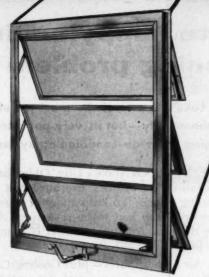
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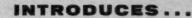
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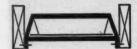
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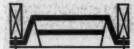
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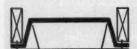
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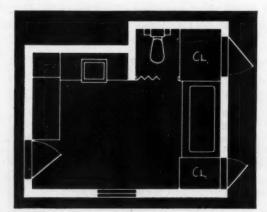
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Your customers will be seeing this new bathroom, the third of a series, in leading national consumer magazines. Illustrated in full color, this series is sparking wide interest in bathroom design—vividly demonstrating the full beauty of Richmond fixtures—helping build the consumer brand-acceptance you desire.

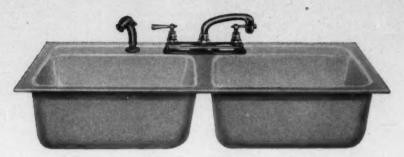
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 $RICHMOND\ldots$ the complete line of top quality lavatories, water closets and baths. Sold through selected wholesalers.

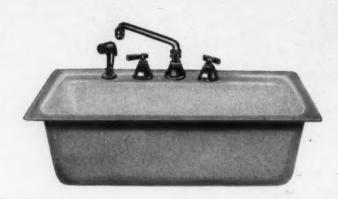
See other side for complete details on Richmond's modern line of enameled cast iron kitchen sinks.

the modern line of enameled cast iron sinks

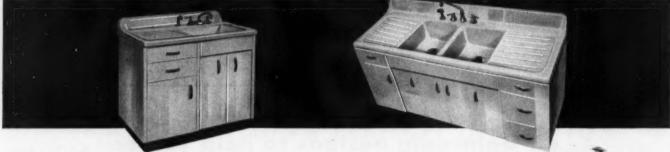
for every type of installation



Shelten No. 2115 — Double compartment, flat rim with ledge. Sizes: $32'' \times 21''$ and $42'' \times 21''$. Sonora No. 2017 — without ledge — $32'' \times 20''$, $42'' \times 22''$ — Plus New Size — $32'' \times 18''$.



Stratton No. 2110—Single compartment, flat rim with ledge. Sizes: 24" x 21" and 30" x 21".



Schenley — Single compartment, single drainboard with ledge-back. Size: 42° x 25". No. 1550 — Left drainboard. No. 1552 — Right drainboard. Sewanee — Single compartment, single drainboard with ledge-back. Size: 42° x 22°. No. 1554 — Left drainboard. No. 1556 — Right drainboard.

For built-in counters.

Flat-rim sinks with single or double compartments. With or without ledge for deck-type fittings.

For base cabinets.

Ledge-back sinks with single or double compartments, single or double drainboards.

For installations where space is at a premium.

Compact sink and tray combinations—ledge-back and flat rim.

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Wall-hung roll rim sinks, single drainboards (left or right).

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Durable cast iron base with easy-to-clean, acid-resisting enamel for lasting beauty.

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Sizes: 60" x 25" and 72" x 25".

Servilla No. 1535—Single compartment, double drainboard with ledge-back.

Sizes: 54" x 25" and 60" x 25".

Seymour No. 1537—Single compartment, double drainboard with ledge-back. Sizes: 54° x 22" and 60" x 22".

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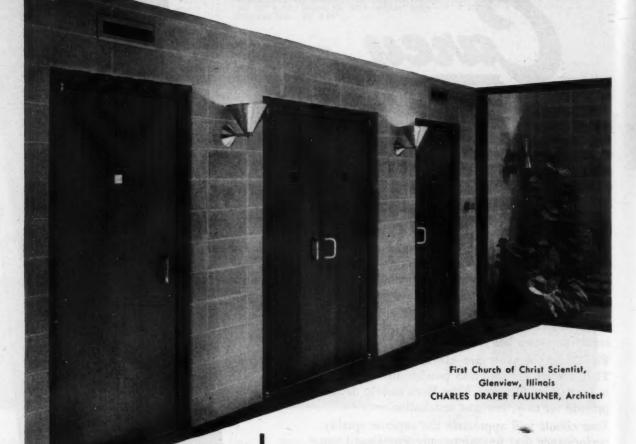
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State of Alabama Agricultural Coliseum, Montgomery, Ala. Architect: Sherlock, Smith & Adams, Montgomery, Ala. Electrical Engineer: James L. Phillips, Birmingham, Ala. Electrical Contractor: T. D. Little Co., Montgomery, Ala. Distributor: Noland Co. of Montgomery

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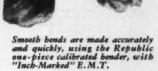
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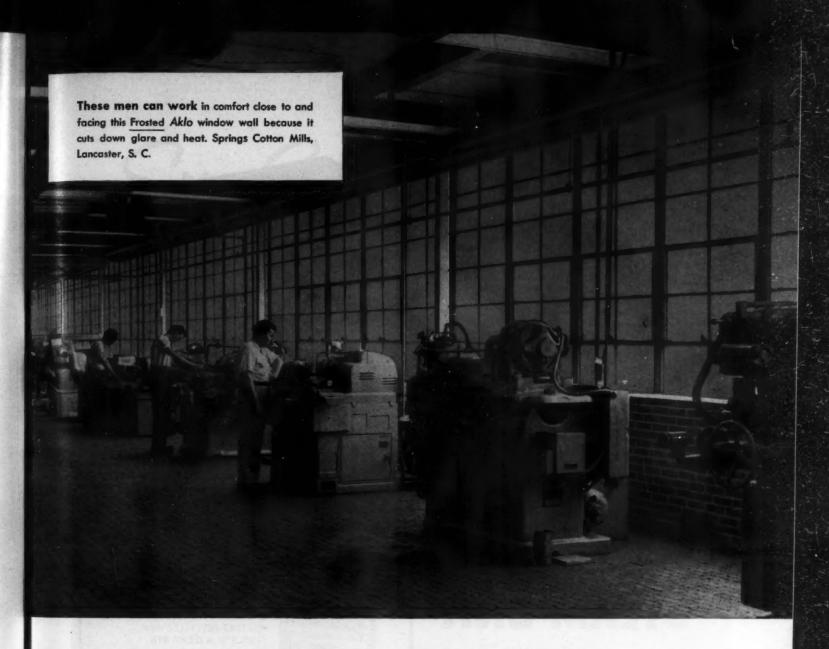
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Ask for the booklet, "Filtered Daylight", as well.

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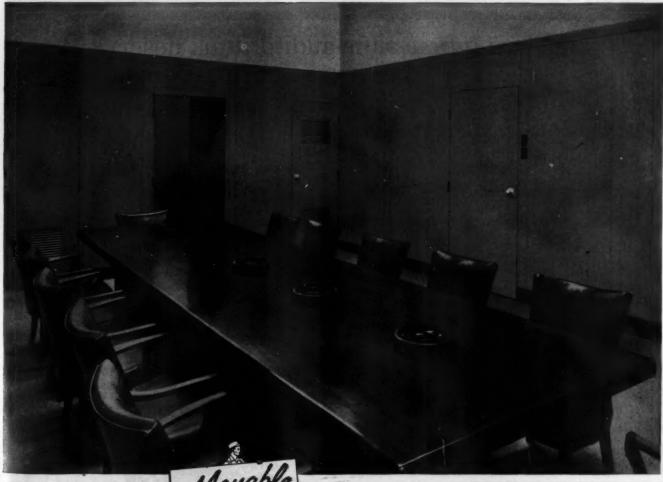
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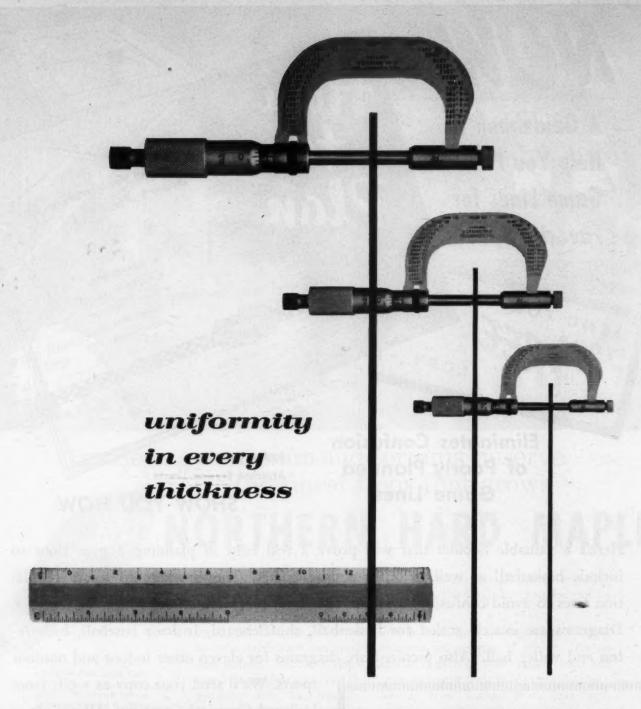
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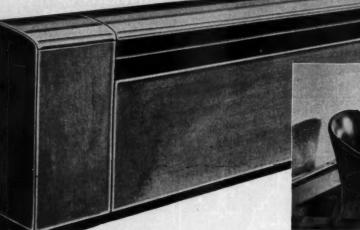
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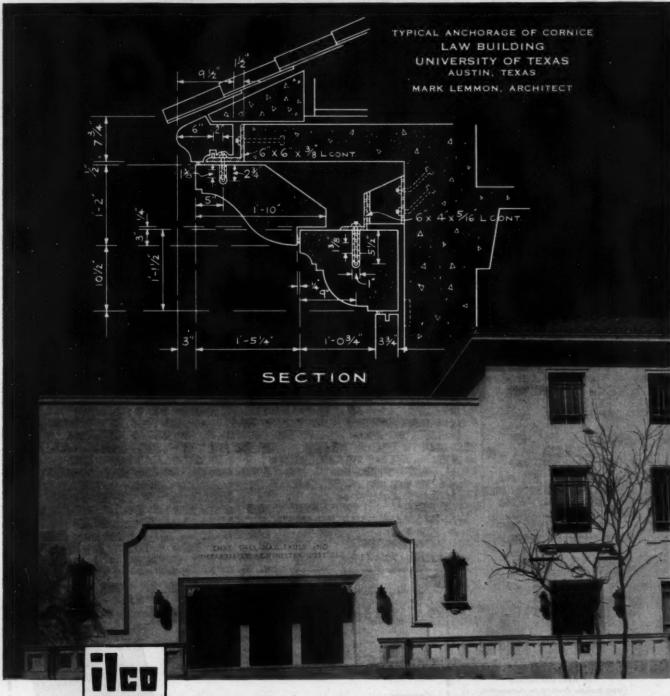
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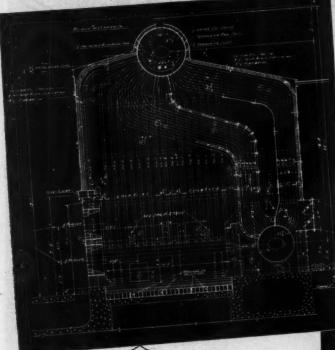
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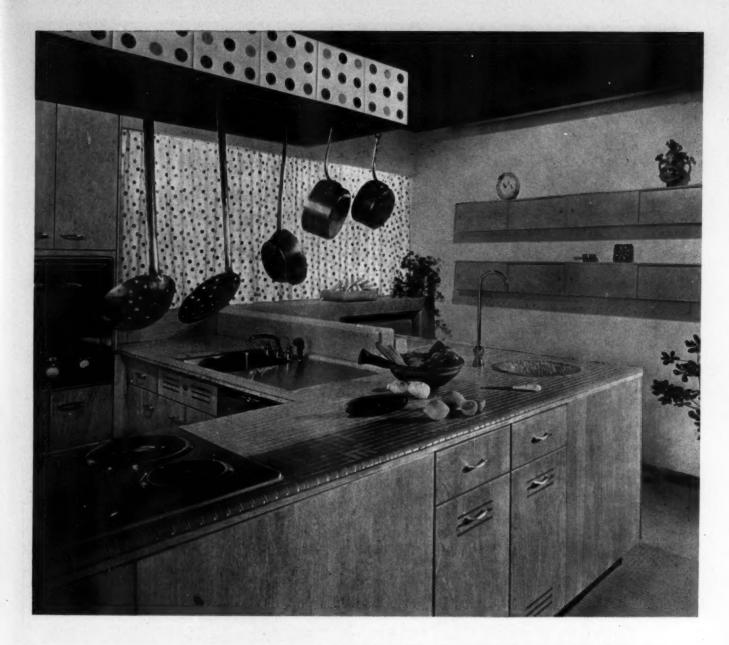
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Designers: William Pahlmann Associates, Inc. Tile Contractor: Tilecraft, New York Photo: Lionel Preedman



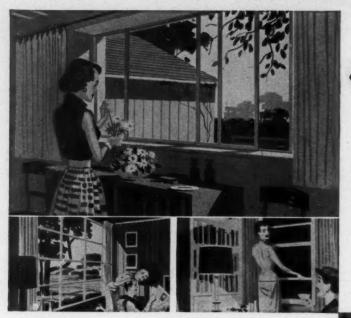


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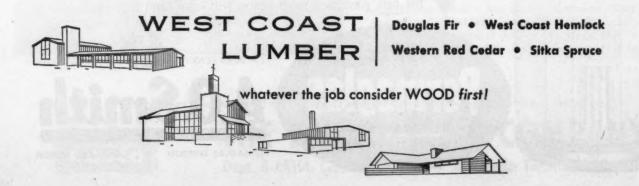
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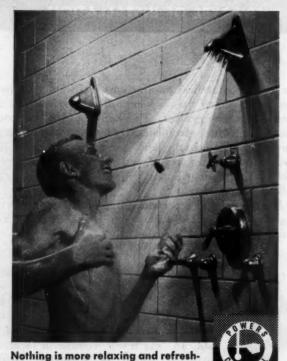
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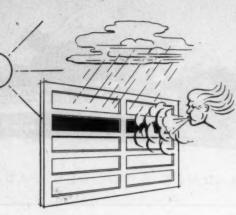
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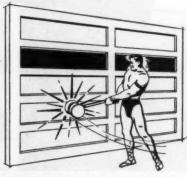
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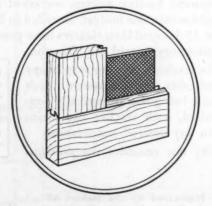


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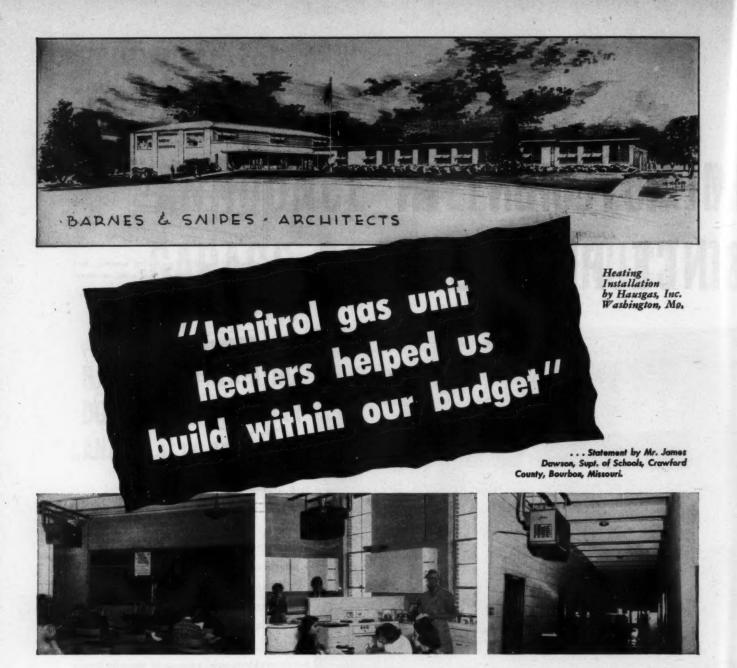
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Engineered by the makers of the famous furnaces that heat treat most of the products of big name industry.



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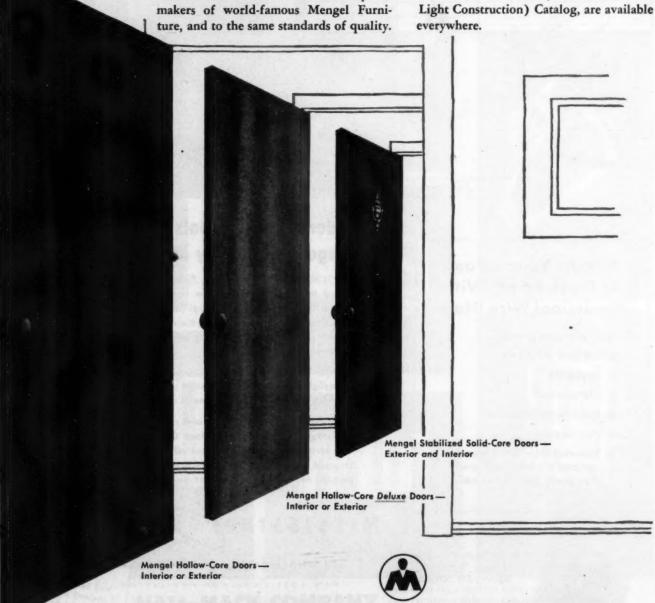
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Students and Schools Guarded Against Breakage and Fire by Mississippi Wire Glass

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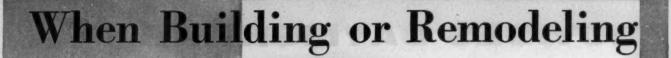
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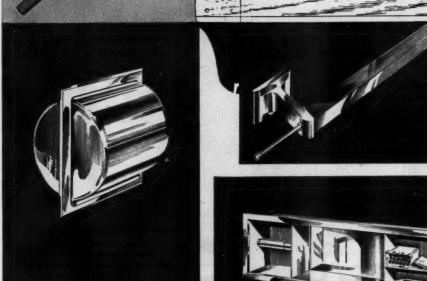
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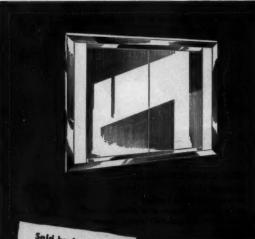
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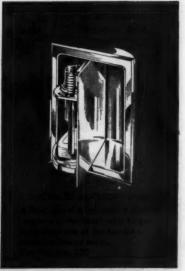
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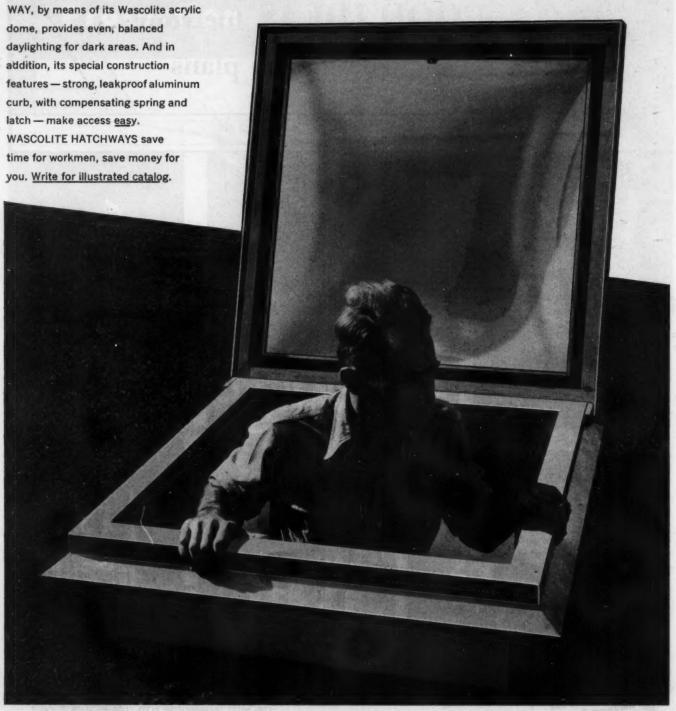
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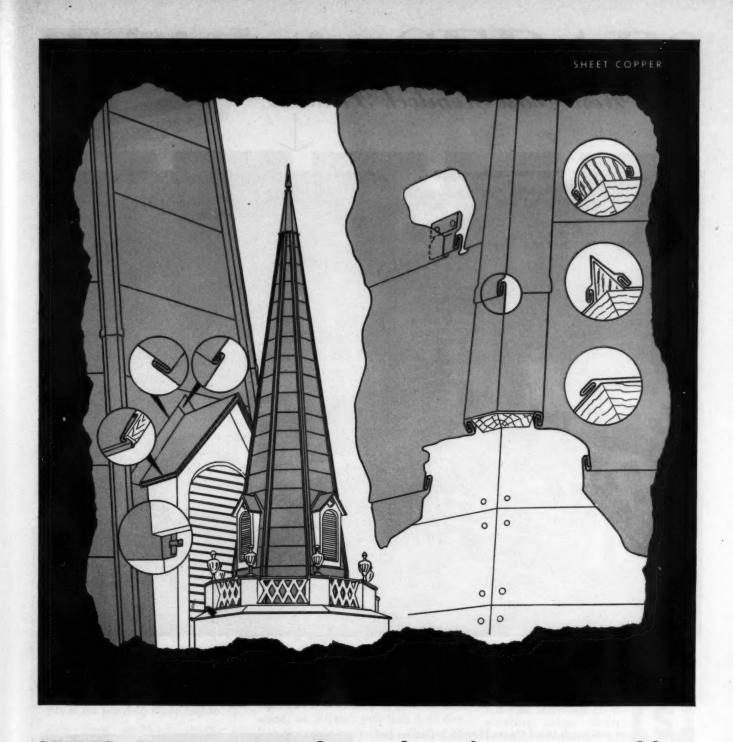
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The copper-covered spire shown above is built in much the same way as a batten-seam roof. Details for edgings, etc., are simple, and copper covering

is built into the wood construction of the ventilating dormers at the base. Several alternate types of battens or methods of joining at the corners are also shown. For small spires, 16 oz. copper of cornice temper does very well. For large spires, 20 oz. copper is preferred.



Do you have the FREE Anaconda file of drawings? Each drawing shows a new or improved way to apply sheet copper. Each is printed on a separate 8% x 11 page, handy for quick-reference filing. This series may be obtained absolutely FREE by writing for Portfolio S to The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

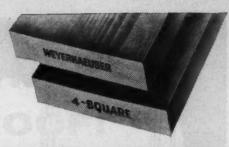
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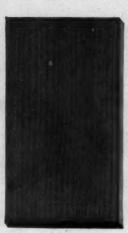
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Architect: Stanton and Hillier, Detroit, Mich.

General Contractor: Walbridge-Aldinger Company, Detroit, Mich.

Consulting Engineer: George Wagschal & Associates, Detroit, Mich.

Mechanical Contractor: Johnson-Larsen & Co., Detroit, Mich.



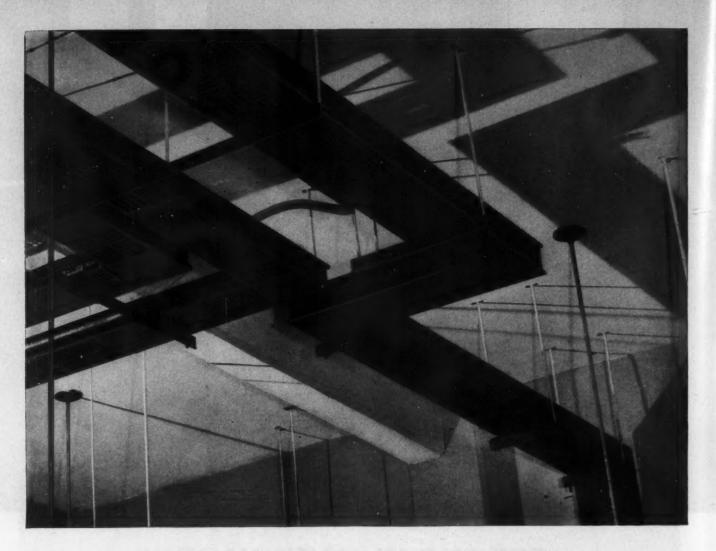
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...LIGHT WEIGHT FOR SIMPLIFIED BUILDING DESIGN

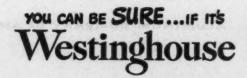
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● First the United Nations Building . . . then Lever House, and the all-aluminum office buildings at 99 Park Avenue and 460 Park Avenue . . . and now the Manufacturers Trust Company's spectacular new "showcase" bank building in New York City. All outstanding in design—all with windows and curtain wall facades fabricated by General Bronze.

As you plan new buildings—hospitals, schools, apartments or commercial buildings—we want you to make full use of the service and 40 years practical experience General Bronze offers in solving your problems as they pertain to windows, spandrels, curtain walls and architectural metal work.

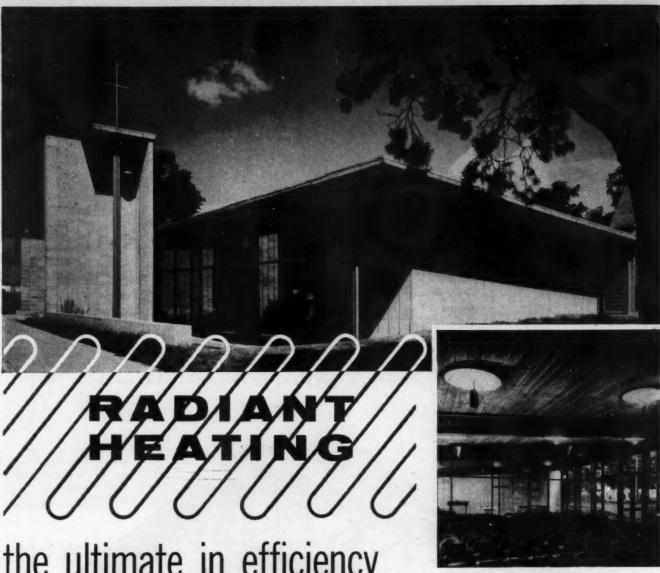
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In such installations where efficiency is the key word, there is no better choice of materials to be made than NATIONAL Pipe—dependability at a moderate price. So dependable that architects and contractors have been specifying it for over 60 years as the "standard" for conventional plumbing and heating systems. They

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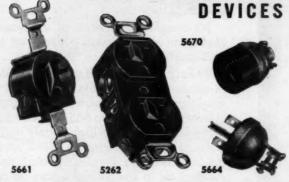
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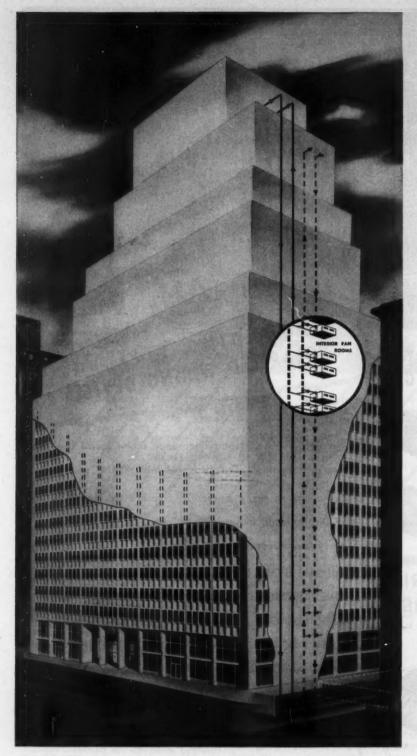
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WATER IS CHILLED by Worthington centrifugal refrigeration units in subcellar, then fed through riser (dotted line — "up" arrows) to interior fan rooms. Water returns to sub-cellar

(dotted line — "down" arrows) to complete circuit. Solid lines show condenser water circuit. Double lines show chilled water system (one in each face of building) for room units.

New building trend set by air-conditioned skyscraper

This 26-story structure at 99 Park Avenue is distinctly different from anything ever built in Manhattan.

It's completely sheathed in self-cleaning aluminum, with reversible windows set with heat-resistant glass.

99 Park is also going to set a new standard in comfort for its tenants. Dependable air conditioning is provided by a Worthington system made up of two 665-ton centrifugal refrigerating units, which supply chilled water to 38 Worthington-equipped interior fan rooms. These distribute cooled, dehumidified air to the interior offices on each floor. The centrifugal units also furnish chilled water for individually controllable room conditioners enabling tenants in the outer offices to select their own climate.

For more than fifty years, Worthingtonengineered air conditioning installations have been serving business and industry. Whether large or small, Worthington systems are all Worthington-made, not just Worthington-assembled. For the full story, contact your nearest Worthington district office, or write to Worthington Corporation, Air Conditioning and Refrigeration Division, Harrison, N.J.

Tishman Realty & Construction Co., Inc., Owners and Builders; Emery Roth & Sons, Architects; W. R. Cosentini & Associates, Consulting Engineers; Raisler Corporation, Mechanical Contractor; Cushman & Wakefield, Inc., Agent.

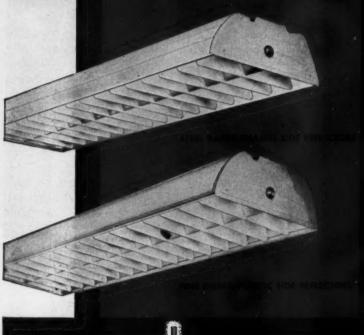
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Curtis Tong Hangers facilitate and cut installation cost. Use of Tong Hangers allows considerable flexibility in placement of hangers and permits by-passing of building construction obstacles such as beams, sprinkler heads, etc. Write for illustrated literature.

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The average architect rarely gets called on to design a milk factory where he has to deal with bovine living habits. In a "bossy"-to-bottle production under one roof, like the one shown here, you've got to consider such things as sanitation and temperature control. As a rule cows don't seem to care much what school of architecture you follow, so long as the detail is right.

One way to win contented cows is to specify the right roof. An insulated roof deck like this may be flush, creating a drippage problem—or curbed. In either case, there's a right answer to this and practically every other roofing problem you're

Typical detail from Ruberoid Specification Book showing Roof with Curb and Insulation

likely to run into in Ruberoid's Built-Up Roofing Specification Book. It contains complete roof "specs" for smooth surfaced asbestos, coal tar pitch with gravel or slag surfacing, or gravel-and-slag surfaced Ruberoid Special Bitumen, plus working details for a wide variety of flashing and eave construction. Write for your free copy to The Ruberoid Co., 500 Fifth Avenue, New York 36, N. Y.

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ASPHALT AND ASBESTOS BUILDING MATERIALS



MANUFACTURERS TRUST COMPANY BUILDS CONVERSATION PIECE ON FIFTH AVENUE

New York's Glass-walled New Bank is Exciting Much Comment and Attracting Thousands of Visitors, as Owner and Architect Intended

Skidmore, Owings & Merrill, Architects: Gordon Bunshaft, in charge of design William S. Brown, Coordination Weiskopf & Pickworth, Structural Engineers

Syska & Hennessy, Mechanical & Electrical Engineers

Eleanor Le Maire, Interior Consultant

Clarke & Rapuano, Landscape Architects

George A. Fuller Construction Co., Builders

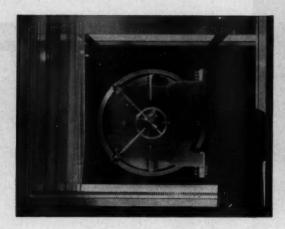
CONCEPT: The new architecture is now at work for the Manufacturers Trust Company. The bank, in building a five-story, all-glass display case for a venerable business, recognized that public excitement is a tangible asset, and that truly distinctive architecture can create the most desirable kind of excitement. Not to mention that, along with its publicity value, good design also provides attractive and efficient space for carrying on a banking business. There is sufficient value here to justify the decision not to build a skyscraper, though to tell the truth this site, while extremely costly, was sufficiently restricted by both set-back regulations and deed restrictions on air-rights as to compromise its potentials for producing rental revenue from upper-floor space.

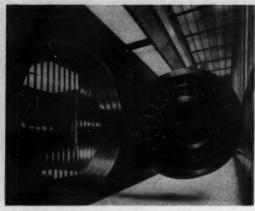
Since the building opened in October, thousands of people have yielded to its manifest invitation to enter, have remained to exclaim over its design, its lighting, its modern sculpture, its "atmosphere," its huge vault placed as a window display. While some of the comments have indicated puzzlement, it has put the bank (and modern architecture) on everybody's tongue. It has become Fifth Avenue's conversation piece.

The more perceptive observer notes certain details which, though not as spectacular as the largest glass panels yet installed, do contribute to this building's impact. The precise pattern of vertical mullions, a pattern which changes subtly as the viewpoint moves; the horizontal rhythm of the glowing ceiling planes and the dark spandrels; the ordered precision of huge panels and of vast, bright open spaces within.

The delicate glass exterior was made possible by a system of two-directional cantilevered floor slabs supported by only eight interior columns. Since the glass curtain could hang in place, the mullions—thus in tension—could be of minimum cross-section.



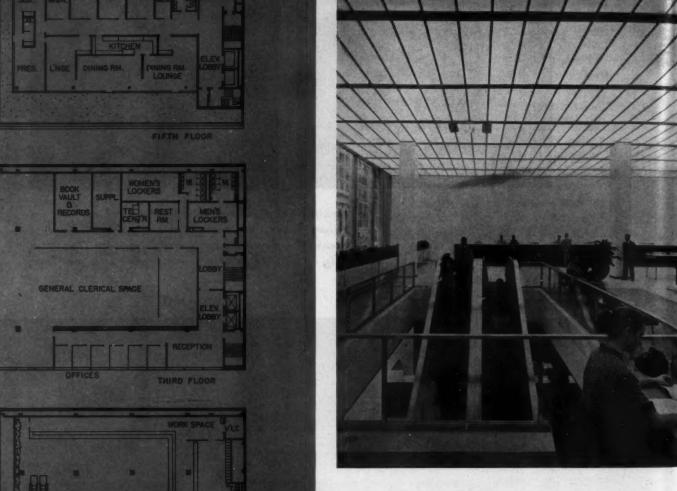




P From Stollar

The beautifully machined vault door, fashioned of stainless steel and polished bronze, was designed by Henry Dreyfuss, working closely with the architect and manufacturer's engineers. The 30-ton closure is so delicately balanced it can be swung by one finger





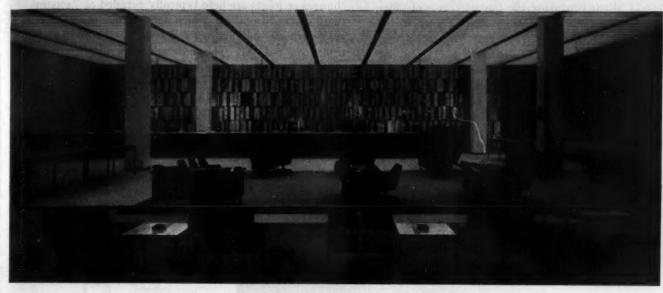
BANKING ROOM: Interior interest centers on the second floor banking room, reached by electric stairway. This space makes a minimum of fuss about banking. The counter is here—120 ft of it—and the officers too, but the atmosphere is one of almost classic serenity. The space is dignified yet lively; ordered but not forbidding. There is careful articulation of line, scale, color and material in floor, ceiling, counters and plant boxes; all serving as a foil for the feature at the rear.

Here, Harry Bertoia has created a spectacular backdrop for banking: the golden-yellow metallic screen, 70 ft long, which divides public and work spaces without destroying the area's essential unity.

The open, flat-topped banking counter, of marble and macassar ebony, is both good looking and flexible, making provision for shifting tellers almost at will by means of movable deal plates and under-counter equipment.

The luminous ceiling surface consists of thin, milky-white, corrugated plastic sheets suspended in aluminum Ts.









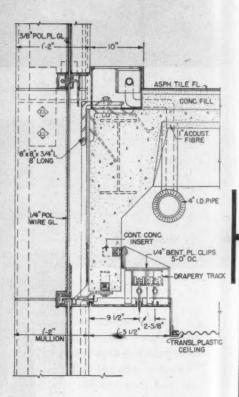


THE GLASS SKIN: Featuring the largest pieces of glass ever placed in a building — 10 by 22 ft, $\frac{1}{2}$ in. thick, weighing 1500 lb. each — the exterior glass sheathing is a true curtain, with each aluminum panel mullion hanging from the cantilever edge above and with the glass free to "ride" in its surround as expansion and contraction occur.

Great precision was required in this building's execution, both inside and out. Unlike traditional construction, in which a moulding covers joints, material

changes or joints are here typically detailed as "separation" or "cut-in fillets" which demand close tolerances, precise sizing and fitting, and careful coordination of trades on the job. The builder's superintendent described this project as "more like jewelry than building." The result, however, due to the architect's attention to detail at every point and the builders' skill in execution, is an outstanding example of the kind of refinement and precision possible in today's construction — a far cry indeed from the crudeness of certain other times.



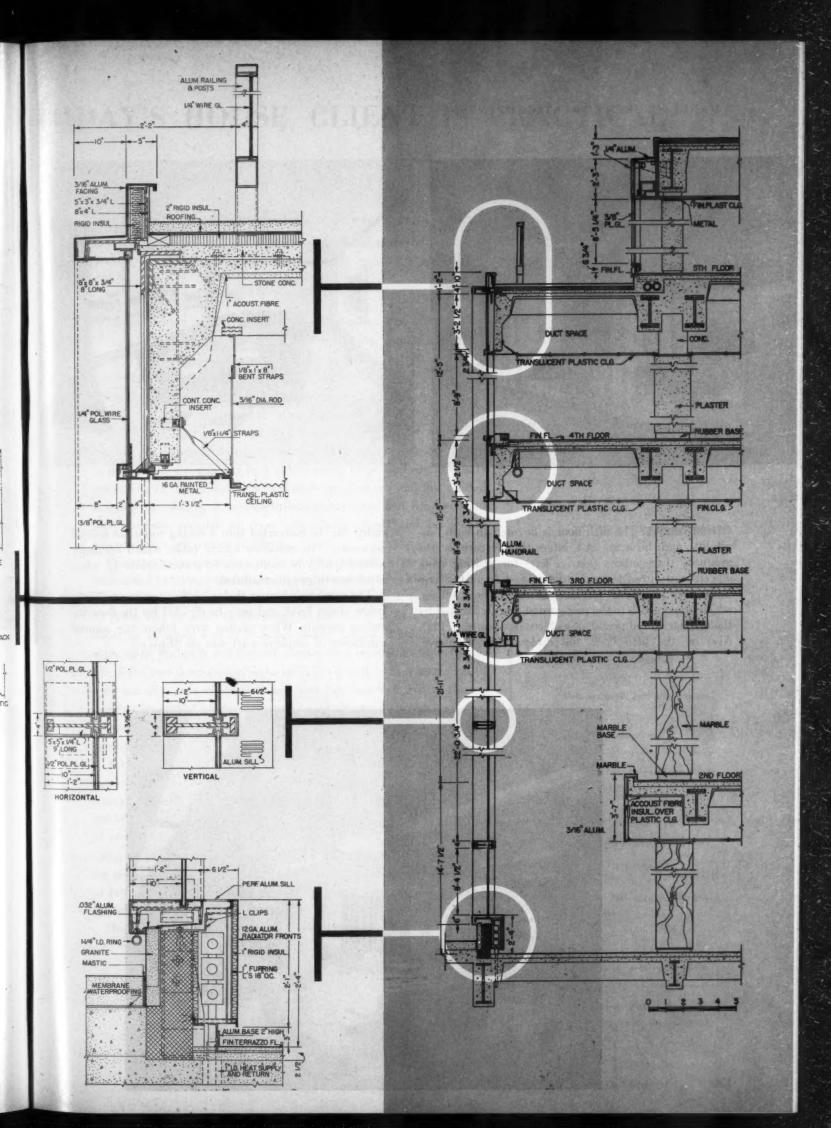


© Ezra Stoller

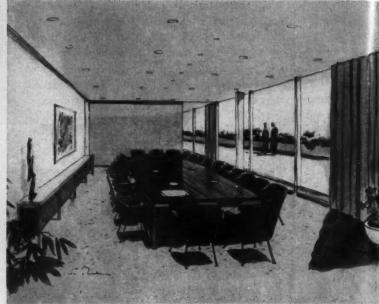




Stand Same







OTHER AREAS: The fifth floor is devoted to both hospitality and business. An interesting feature is the group of three offices (above, left) for visiting bank officers and out-of-town customers and friends. Secretarial and telephone service goes with these offices, which orient south to the roof garden and are flanked by the manager's and president's offices (see plans, p. 152). Also on the fifth floor, the directors room (above,

right) can be converted into a dining room for special occasions. The macassar ebony table, which normally seats 25, may be contracted to accommodate 12 when small meetings are scheduled.

The employe's lounge (below) is located immediately below street level, and may be divided by the floor-toceiling curtain. When photos' were taken, the annual exhibition of employe's art was on display.



Ezra Stoller

TODAY'S HOUSE CLIENT IS PRACTICAL

Family needs and individual interests outweigh stylistic and technological considerations

THOUSANDS OF YEARS AGO a man and a woman, tired of having the rain beat on their unprotected heads, set up housekeeping in a cave. Their friends, no doubt, soon came to call — and left quickly to seek caves of their own — better caves, of course.

From that day to this, would-be home owners have compared notes and pooled ideas, dreamed dreams, and worked hard to get what they wanted. In recent years they have discovered that technology has outwitted nature to the extent that they now can have any kind of house they want in any part of the world. Cape Cod cottages have sprung up in desert regions where their small rooms and low ceilings demand the utmost of air conditioning; flat roofs and window walls have become popular in areas where snow loads and below-zero temperatures are serious problems.

Common sense seems now to be on the up-grade: style is less often mentioned in client demands than good design and sensible planning. Today's house client, in all parts of the United States, is more likely to stress two or three of the items on the list at right than he is to insist on a hipped roof or a contemporary façade. Building costs are high, so he probably will request construction economies where possible. Furniture is expensive, so he most likely will want a maximum of built-ins. Servants are hard to get, and high-salaried: add to the requirements ease of maintenance and a well-arranged kitchen with easy access to dining area. These things, plus re-sale value, now are primary.

A more recent development is the increasing emphasis on simultaneous entertaining by various family groups, on adjustability to changing family needs, and on provision for family interests and hobbies. These requirements have become as basic as the ancient one of protection. House clients in Maine are asking for much the same thing as their cousins in Texas, Illinois and California. The problem for today's house architect, therefore, seems to be one of adaptation: of requirements to site and climate; of technology and materials to appropriateness and individual taste.

Here are seven houses which illustrate that point.

- Florence A. van Wyck

THE EMPHASIS IS ON

Economy of construction

Well-designed built-in furniture

Ease of maintenance

Provision for outdoor living even where climate requires protective devices

Adjustability to changing family needs

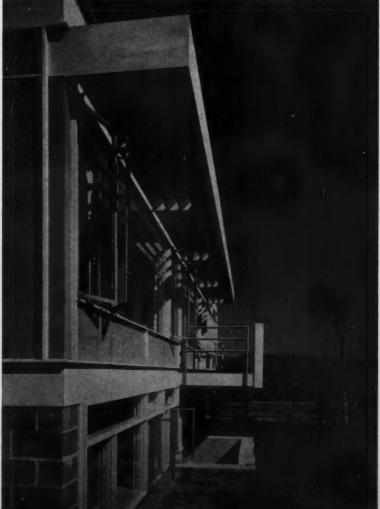
Provision for special interests and hobbies

Provision for simultaneous entertaining by different generations

Kitchen and dining area arranged for easy access, easy







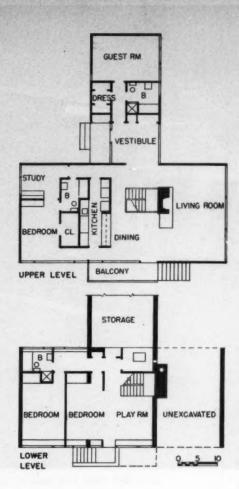


A THREE-

House is T-shaped, with lower floor of main element almost 3 ft below grade. Children's bedrooms and playroom are on lower level, with direct access to spacious lawn at rear of house. Balcony and steps connect upper-level living-dining area with same lawn. Lower portion of house is concrete block, upper story and wing are wood frame. Upper level is some 5 ft 6 in. above grade, has commanding view of valley and hills

zra Stoller





GENERATION HOUSE WITH PRIVACY FOR ALL

THE ACCOMMODATION OF THREE GENERATIONS, with their varying interests and activities, was the theme around which this house was designed. The children have almost the entire lower level to themselves, with their own bath and direct access to the out-of-doors on both sides of their playroom. The main portion of the upper level is the parents' special domain, including master bedroom, study-dressing room, living-dining room and kitchen. A separate wing on this level provides a guest room suite usually used by a grandparent. The location of the main entrance and the vestibule at the juncture of this wing and the main part of the house gives each member of the family complete freedom to come and go as he or she wishes, without disturbing the others. Yet the kitchen is so centrally located that the mother can keep a watchful eye on the youngsters, indoors or outdoors, at all times.

Structure is frankly expressed throughout the house. The framing system used was developed to make possible a three-dimensional composition of panels, usually related to each other in a checkerboard pattern.

House for Dr. and Mrs. Camille H. Huvelle Litchfield, Connecticut

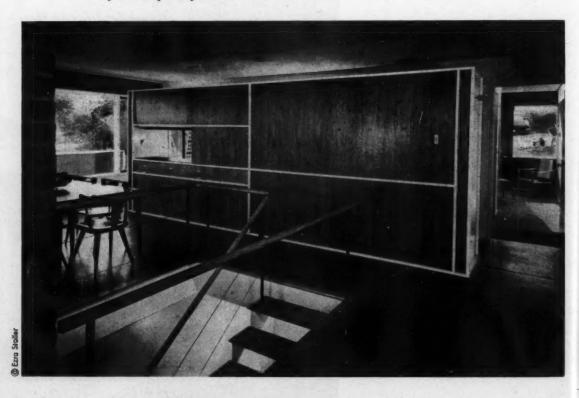
John MacL. Johansen, Architect



Main entrance leads directly to all parts of house. Glass wall on far side of vestibule gives two-way view, emphasizes openness



Upper-level living-dining area of Huvelle house is completely open except for brick fireplace and stair well. Entrance hall (at left, above) adjoins this area, is equally handy to other parts of house



Built-in storage cabinets separate kitchen and dining area. Stairs down to children's rooms are adjacent; master bedroom suite is behind kitchen

Guest room or grandparent's suite is separated from entrance hall by large storage closets; suite includes dressing room and bath





Kitchen is an island in the center of house, walled on long sides by built-ins; open ends give ready access to all parts of house and admit light from glass wall of adjacent dining area. Large passthrough makes serving easy









ONE HOUSE: TWO FAMILY-ACTIVITY AREAS

House for Mr. and Mrs. William Rowe Smith, Provo, Utah

Fred L. Markham, Architect

W. Rowe Smith, Associate Designer

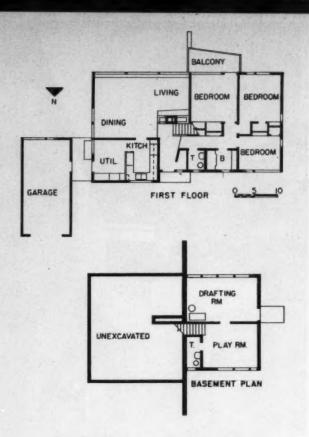


THE DIFFERING ACTIVITIES of children and adults were I the major concern of Architect Smith and his wife as they planned this house. The Smiths like to entertain informally and are accustomed to having as many as 30 guests "drop in" on a Saturday night; they arranged their living-dining-kitchen area to make such entertaining as easy as possible, and placed the children's rooms at the opposite end of the house to keep adult merriment from interfering with small-fry sleep. "The entire house," Mr. Smith says, "was 'kid-proofed,' which simply means we included nothing to worry over until the kids got up to an eight-pound hammer." Floors are concrete, interior walls are redwood and sheetrock — all nicely durable materials. The basement playroom is directly accessible from both entrance hall and children's bedrooms, leaving the main living area free from youthful encroachment.

The plan worked out well for the Smiths, who report that living in the house was "a thrilling experience." The family recently has moved to Salt Lake City, where Mr. Smith now has his practice, but still fondly recalls such details as the stone fireplace, visible from the entrance hall, and the warmth of redwood walls and fir ceilings. Although the house was planned around the specific needs of one family, it was planned also to meet changing needs; its versatility made it an asset when the time came to sell.







House was planned for family with three children; children's rooms are well isolated from rest of house but handy to basement playroom. Basement area could easily be converted to recreation room



Living room has huge picture window on one side, stone fireplace on other. A 6-ft partition separates it from master bedroom





House for Mr. and Mrs. Allen Andrews Arlington, Va.

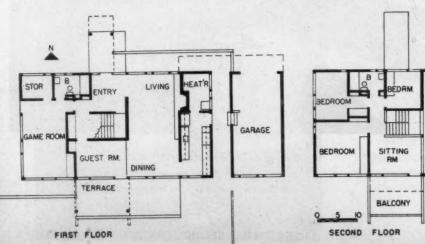
Burchard-Lyman, Architects

PROVISION FOR A GROWING FAMILY'S NEEDS

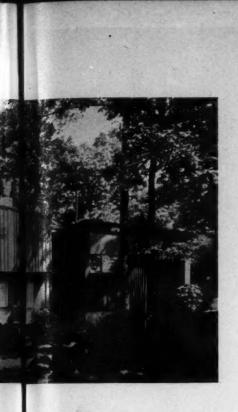
ADAPTABILITY FOR A GROWING FAMILY was the major factor in the planning of this house. The owners are a young couple with two small children; they wanted a house which would accommodate not only their own family but their parents, who visit them frequently, and up to 20 guests for buffet suppers. They also wanted a house which could be expanded or adapted to take care of additional children. The solution was a two-level house with a first-floor game room which can be

used as a playroom for the children during the daytime or as an overflow entertainment area in the evenings; this room was planned as the future master bedroom, and was provided with an adjacent bath.

The owners looked forward to many pleasant hours of outdoor living on the south side of the house where there is a distant view of Alexandria and the Potomac. A paved terrace, partially protected from the sun by the second-floor balcony, takes advantage of this view.



Lower-level game room was planned as future master bedroom, so has connecting bath. House cost just over \$20,000, is worth twice that on market, architect says. Clients call it "tremendous success"







Balcony treatment of upper level adds considerably to spaciousness of lower level. Dining area (below left) was planned to accommodate frequent guests and large buffet suppers





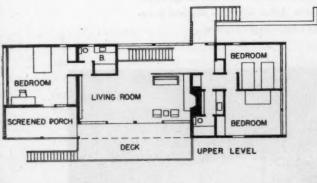
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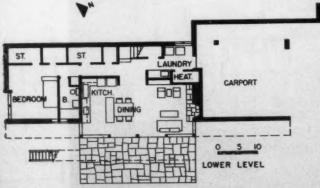


FORMAL AND INFORMAL LIVING UNDER ONE ROOF

House for Mr. and Mrs. Harold Loeb Weston, Connecticut

George S. Lewis, Architect, with Allan Gould





Two separate living areas were required by the owners of this house to allow them and their son and daughter to entertain simultaneously. The two rooms were placed one above the other so that each would face the river which forms the lower boundary of the property; they were intended to be—and are—quite different in character: the lower one is informal and intimate, the upper one more formal. Since Mrs. Loeb does her own cooking and likes to have her family and guests with her while she does it, the lower-level kitchen-dining-living area has become the most used room in the house.



TODAY'S HOUSE CLIENT - 4





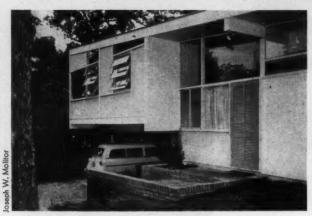






Main living-dining-kitchen area is on lower level (top two pictures), where soffit of cantilevered deck draws attention downward toward terrace and river. In upper living room (left) the eye is directed more to sky. Clients argued architect into putting house at river's edge. Architect now admits that privacy gained was well worth sacrifice of view from upper part of site







ECONOMICAL CONSTRUCTION, OPEN PLAN

House for Mr. & Mrs. William Weber Raleigh, North Carolina William Weber, Architect George Matsumoto, Consultant

BEDROOM BEDROOM DINING DINING STUDY

BEDROOM BEDROOM DINING STUDY

BEDROOM DINING DINING STUDY

BEDROOM DINING DINING STUDY

Since the temperature in Raleigh is on the warm side for a good part of the year, the house opens to the south toward the prevailing breeze. The sloping site was used to separate bedroom and living areas. Construction is dry wall, with plywood, painted or in natural finish, used on both exterior and interior; end walls are vertical

E The owners—the architect and his wife—knew that the sloping site they had selected virtually demanded a house a story and a half in height; they also liked the idea of exposed beams and definitely wanted a guest-room study area and an open kitchen-dining area. Another basic requirement was two baths, or at least a bath and a half, to accommodate the family of parents and two children. And they wanted a built-in high-fidelity set-up.



Living room opens to terrace at rear of house, has high-fidelity speaker built into fireplace wall. Book shelves and cabinets separate living area from entrance hall and study-guest room. (below)







Every room in the house except the study-guest room can be reached directly from entrance hall. An informal half-dozen steps lead to bedroom corridor lined with storage cabinets. Below: living room from balcony bedroom, with study in background, kitchen on right







Two of the three bedrooms are nicely cut off from rest of the house; the third is a balcony closed off from the living room by a curtain. Kitchen is arranged to permit simultaneous cooking, entertaining and supervision of children; the serving counter is as handy for breakfast and a quick lunch as it is for large-scale buffet suppers

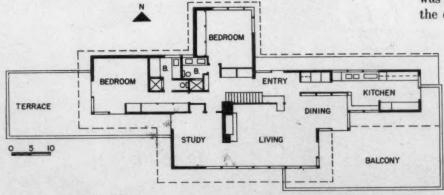












INFORMAL ENTERTAINMENT

House for Mr. and Mrs. Al Liss Middletown, N. Y.

Aaron L. Resnick, Architect Mildred Resnick, Furnishings Consultant

Informality and ease of maintenance were the major requirements the owners of this house insisted on. Two of their three children were already married and had families of their own; Mr. and Mrs. Liss wanted plenty of room to entertain them, other relatives and friends, frequently in large groups. The kitchen was planned to make such entertainment possible, and also to provide space for Mrs. Liss's canning and freezing activities. Since the site was sloping, a two-level house was indicated; this permitted a large play area for the children on the lower level and an adjoining

workshop for Mr. Liss, whose hobby is woodworking; it also permitted a huge balcony over the carport. Construction costs were low because a son of the owners, an engineer, acted as building superintendent and all of the built-in units, designed by the architect, were constructed by Mr. Liss, his son, and one carpenter.





Living-dining-kitchen area was planned to make large-scale entertaining as easy as possible. Kitchen opens directly to dining area, has separate breakfast bar and exceptionally large work space. Large gatherings can overflow into study adjoining living room





Construction materials were chosen to lighten housekeeping load: floors are concrete tile, interior walls are birch plywood or brick. As much furniture as possible was built in and designed for easy cleaning — note "mop-space" below living room couches









LIVING-DINING

House for
Mr. & Mrs. Erne R. Frueh
Highland Park,
Illinois
Robert Bruce Tague,
Architect

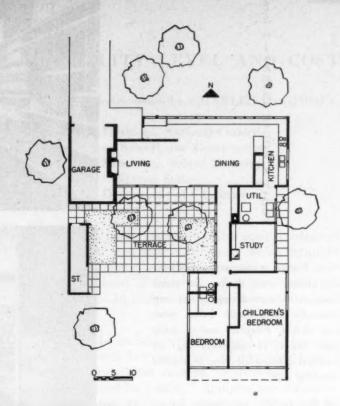




REA OFF PRIVATE PATIO

A LARGE LIVING-DINING AREA, opening to a private terrace, and a partially open dining-kitchen arrangement headed the list of requirements for this house. The owners, both of them interested in music, painting and literature, have two small daughters and stipulated that the children's area should be large and flexible enough to permit rearrangement as the girls mature. The house was designed accordingly and so successfully that the owners report it needs a minimum of cleaning and little redecoration, affords a great deal of privacy, is cheery even on the gloomiest days because of its large windows, and has a kitchen which "works wonderfully well." They admit, however, that the utility room is too small and that "the entrance looks right into the dining area."









Owners like division of living-dining area into music room and "adult play area." They also consider children's room "excellent" solution

Frueh kitchen is compact, has adjoining utility area. Shelves for china continue through dining space, and eventually merge with living room book shelves. Fireplace end of living room (below) is completely shut off from rest of house but opens to secluded terrace at rear







SCHOOL BUILDINGS

QUALITY LEVEL AND COST

a discussion by CHARLES D. GIBSON,

President, National Council on Schoolhouse Construction. Supervisor, School Planning, California State Department of Education

How can we provide enough schoolhouses?" From coast to coast this is the school question. Current and reliably predicted enrollments at every grade level are nearly straight-up curves. Today's schoolhousing shortage, broadly, is a direct product of a combination of a depression, wars, high birth rate and population mobility. Indirectly, its size and complexity also must be credited to factors such as poor school districting or school district organization, lack of long-range planning and inadequate financing — all perennial curses on educational programming in this country.

While no one denies the problem, some underestimate its real size; for example, by assuming it is temporary. The only excuse for such an attitude is wishful thinking. The cold statistics are available nationally from the U.S. Office of Education.1 Locally, most citizens can observe children standing several deep behind each school desk and creating serious traffic problems on residential streets. We will continue to face the need for extensive school plant construction for many years. How will we meet it? Of the many answers to this question the one here discussed is: "We will meet this gargantuan need for more schoolhousing by cutting the costs of new construction." This reply has great popular appeal because it means saving money, which everyone would like to do. Yet curing schoolhousing troubles by cutting construction cost brings up some tough decisions.

THE LEVEL OF QUALITY

The degree to which a school plant provides a proper environment for the activities that must go on in it determines its quality level; a comprehensive definition might state that quality level is the degree to which the school plant:

- (a) makes satisfactory provisions for the spaces needed to do a sound educational job now while protecting the probability that space needs of future educational programs will change;
- (b) provides for its occupants the amenities which the

American public associates with a good standard of living and a physical environment which promotes working comfort and efficiency;

(c) is constructed of materials which give maximum life to the buildings and ensure low maintenance costs.

Reducing the quality level of a school plant has cost implications well beyond dollar considerations alone. One dictionary defines cost as "a sacrifice, loss or penalty endured for a thing." Applying this definition to schoolhousing, we can ask ourselves: "What will be the sacrifice, loss or penalty in terms of the physiological, psychological and emotional welfare of its generations of occupants? What sacrifice, loss or penalty will it impose on our future leaders in terms of educational opportunities?" At least these additional cost elements are essential components of the total price of schoolhousing.

The remainder of this article is an evaluation of the quality level of the school plant as it is related to: (a) educational services; (b) occupancy; and (c) construction. In turn, the cost elements of each of these quality level considerations will be discussed as they are related to: (a) the physiological, psychological and emotional welfare of occupants; (b) educational opportunities; (c) dollars.

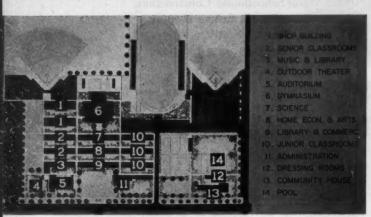
EDUCATIONAL SERVICES and SCHOOL SITES

The quality level of the educational services that can be carried on in a school plant is determined by space adequacy - of site, buildings and provisions for flexibility to insure longterm functional usefulness. Proper location, size and shape of school sites controls to a large degree educational programs and opportunities. Good educational programs rely more and more on close home-school relationships. Communication between parents and teachers is essential to the understandings which are necessary if the child is to adjust satisfactorily in home and school environments; convenient school locations foster easy communication. Schools located and sized to serve neighborhoods also act as adult education centers for parent groups during and after regular school hours. In many areas, elementary schools serve more evening adult classes than high schools because their location is convenient. Convenience and

¹ The U. S. Office of Education estimates that, if we are to catch up with schoolhousing demand by Sept. 1960, we will have to build 720,000 classrooms (including the present unbuilt backlog, replacement of obsolete facilities, and new construction for increasing enrollments). At \$40,000 per room (which includes prorata costs of site, equipment, fees and auxiliary areas such as gyms, auditoria, etc.) this amounts to some \$28.8 billion, or about 3 times the current rate of building.



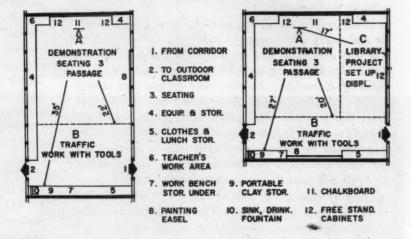
Left, Oak Grove School, La Canada, Calif.; Balch, Bryan, Perkins, Hutchason, Archts. Site planned to retain natural elegance; buildings insure thermal, visual, auditory comfort and work efficiency; decentralized student groups, centralized services, easy expansion. Below, Jr.-Sr. High School, Boulder City, Nev.; Kaufmann & Stanton, Archts. Site planned for school-community program; reduce size—cut the program. Segregating 7–8–9 grades from 10–11–12 permits smooth operation of two programs on one site



adequacy of site largely control the success of supervised recreational programs.

The educational program planned for a site should determine its size. More often than not, false cost analysis reverses the emphasis. Program trends call for more area; school site sizes will continue to be larger. The physical education program is becoming a regular daily experience for more and more students. Many laboratory sciences need outdoor space. Building areas are becoming more decentralized. More and more students drive their own cars to school; driver education is becoming a program "must." More area is being devoted to designed landscaping which not only serves

Sketches; left, impact of dimension on educational usefulness; square room far better educational investment for same area and dollar cost. Right, pie chart represents total energy resources. Amount of energy an individual uses to adjust to environment depends largely on quality level of building. "Cost" is measured in human welfare







total educational needs but also such non-esthetic functions as noise, dust and temperature control.

Proper site location, size, shape and physical features are of paramount importance in planning intelligently a single school building project or formulating a district-wide master plan. Having the school in the right place to serve a natural attendance area is the first essential. To select wisely, however, is no simple matter. School authorities must have all available information concerning total community development patterns before they can make a sound investment in a school site. Accepting a "gift" site or buying the cheap one may violate long-planned zoning patterns and help to unbalance the total economy of an area. Dollar cost should not be con-

Above, West Charleston School, Las Vegas, Nev.; Richard Stadelman, Archt. Connecting corridor widened to form sheltered play area; dollar cost small; educational opportunities and creature comfort great. Left, Andres Duarte School, Los Angeles County, Calif.; Allison and Rible, Archts. Corridors for outdoor classrooms and light control. Tile baffles protect privacy of work groups and classrooms. Note storage space, running water. Concrete walk reflects light into classrooms without sky-glare

sidered until all possible sites have been evaluated in terms of educational services. A school district then should acquire the highest ranking of these evaluated sites it can possibly pay for, fully aware of the sacrifices, losses or penalties in educational services which the community is willing to make.

EDUCATIONAL PROGRAMS and BUILDINGS

Space adequacy of school buildings is measured by how well those buildings provide for the educational program they are to serve and of which they are a part. After the building has been planned to meet program needs, reduction in its quality level reduces the quality of the educational services it can render. Educators in particular have been vulnerable to quality level reduction in school buildings because they have been inarticulate in defining program needs. Without firm, realistic and comprehensive definition of program needs, architects have been vulnerable in interpreting or defending school building design solutions. They, too, have sometimes been unsure of the need for maintaining certain levels of

OTHER DEMANDS
ON STUDENTS
ENERGY SUPPLY

I. STAYING ALIVE
2. TO MOVE ABOUT
3. FIGHT INFECTION
4. GROW & DEVELOP

THE CLASSROOM
(SEEING, HEARING, SITTING, ETC.)

quality in building elements because program requirements have been hazy.

Just as the educational program determines site requirements, so it determines the requirements of the buildings to be placed on that site. Anything less than a thorough documentation of program needs will inevitably result in inadequate building space, no matter how valiantly a designer tries to avoid such a result nor how much or how little it costs in dollars. Time and competence are two more cost factors which must be applied to the price of adequate documentation of educational program needs. Far better educational space, at less cost, often results from an intelligent, organized approach to program space needs analysis. This cannot be over-emphasized. Careful scheduling of space alone may achieve far greater dollar savings than reducing the quality level of a building. Thorough program analysis helps assure a wise balance of building space; when a competitive-sports-minded administrator has to justify building space against program needs we are more likely to find laboratory and gymnasium areas in better balance.

Master-planning of building areas on a site should begin only after the basic classroom design has been established. The program needs of the individual teaching station must be determined before it is possible to plan the proper inter-relationships of building areas. Will the proposed educational services for basic teaching stations require laboratory-type space and equipment arrangement? Will indoor-outdoor work relationships need to be provided? What kind of furniture will be used at pupil stations? There are many other questions.

Time and competence, again, must be purchased in developing the master plan of a school site if either educational service or dollar considerations are to be taken seriously. Planning must be done against policy maximum enrollment figures; against thorough knowledge of over-all community planning; against the unknown needs of a changing curriculum. Real educational opportunities for present and future generations — real dollar savings for today's and tomorrow's taxpayer — can be realized when building space is planned wisely.

In the old days when those who should know better believed it was possible to "rate" a school building on a score card, the standard of classroom space adequacy was the area it took to seat a student. Today, adequacy of a classroom is evaluated against the amount of floor space needed to permit a group of children under a teacher's guidance to carry on the range of educational activities called for in the over-all educational program of the grades to be served by the plant. Unless school building planning is done against that concept of space adequacy, the sacrifice, loss and penalty paid in educational services cannot be balanced by dollar savings.

Space flexibility is translated into school plant design in several ways. First, it means an over-all plant layout which lends itself easily and economically to expansion or contraction. Second, flexibility means that interiors of classrooms or entire building units can be changed easily and economically, as program emphasis may need to be adapted to larger or smaller classes or to different teaching techniques. Third, flexibility means that certain areas can be used for a variety of purposes. A flexible plant will remain adequate educationally for at least as long as it does structurally. It provides that the balance of educational services we strive so hard to get for today's program can be maintained in tomorrow's. If we are shortsighted enough to cut building quality level until flexibility becomes a word and not reality, we should prorate the per-pupil dollar cost of the structure over a ten-year rather than a forty-year period.

Flexibility in buildings must begin in the minds and attitudes of architects. One of the less visible assets of a building, it often gets traded-down-the-river for a pet structural or mechanical system with few, if any, currently being aware of the loss. Many a school official, desiring flexibility, has been discouraged by an architect who has a set structural system that includes six-inch bearing partition walls of reinforced concrete. The naive educator comes to believe that flexibility is expen-



Sunrise Acres School, Las Vegas, Nev.; Richard Stelman, Archt. In this entire school, as in the kindergarten shown, there is proof that amenities cost nothing but time and competence

sive. The truth is that a structural system which permits nonbearing partitions requires expensive engineering know-how; and who pays the engineer's fee? Or the mechanical engineer may protest that a pet heating system would need to be re-designed or abandoned to provide flexibility in the building. Or maybe the architect just has so much work there's no time for the required design research. Any school building designed today that doesn't provide for economical rearrangement of interior space; for interchangeable, portable storage units; for simple re-location of utility services, as the minimum elements of flexibility, is not worthy of an architect's signature nor worth whatever it cost in dollars. The dollar cost of flexibility runs from nothing to a little. The sacrifice, loss and penalty paid in educational services for its lack is immeasurable.

OCCUPANCY REQUIREMENTS

The quality level of a school plant when appraised from the point of view of occupancy reflects a community's desired standard of living; witness the use of the term "occupancy" by planners and zoning authorities. Safety and protection of occupants is the basic requirement for schools as for most structures; getting occupants out of a building safely in an emergency is of far greater concern than saving the building. The quality level of school plants for safety is not a matter of wide choice in most communities; yet, while codes backed by police power take care of this occupancy element rather thoroughly, marginal choices remain to be made. The cost of reducing the safety quality level of a school building is brought home occasionally by disaster, although the price of safety need only be time for wise planning.

Privacy is a major quality level choice today in school design, of particular importance as enrollments rise spectacularly and the unfortunate trend is toward bigger school plants. The pressures created by putting larger and larger heterogeneous groups together in limited space are reflected in the behavior patterns of pupils and teachers. The need for elbow room, the concern for personal and property security, are physiologi-

cal, psychological and emotional factors tied up with learning readiness, work efficiency and behavior.

Whether or not there is adequate privacy is determined to a large degree by whether there is provision for: decentralizing groups and traffic patterns; freedom from interference with other class groups; uncrowded work stations for individuals and small groups; opportunity for private consultation among students, teachers, counselors, administrators and parents; storage of personal belongings; separate and dignified space for student government, publications, etc.; teachers' work and rest facilities in an "escape from children" atmosphere; toileting facilities to accommodate varying age groups. The quality level choices are many. The cost of these choices must include what one is willing to pay for a relaxed, organized and orderly teaching-learning environment. Cutting the quality level in this area means cutting the value of the dollar that pays for the instructional program.

The occupancy-rating of a school building depends, too, upon the provision and control of thermal, visual and auditory space-conditioning elements. Heating, ventilation and protection against extremes of outdoor temperature control the thermal environment, and it, in turn, controls the thermal balance of the body and hence the efficiency of the organism's performance. The research literature documents beyond any reasonable doubt the measurable effect of temperature change on work efficiency. The significance of this fact for school design is increased when one discovers the extremely small range of tolerance the human body has in its efficient relationship to the thermal environment. One interpretation of Walter B. Cannon's work as he reports it in his book, The Wisdom of the Body, says that, for a 100 pound child, a loss of slightly less than one Btu from those needed for a purposeful activity would reduce purposeful activity, for a time, by four per cent. The quality level choices as to degree of thermal comfort and work efficiency to be provided in a school building are made with near finality when basic design characteristics are set. Changing from a less efficient to a more efficient system of heating and ventilating is usually awkward and expensive. The sacrifice, loss or penalty paid for quality level reduction in this building element can have a direct effect on report-card grades or marks, particularly on the "pays attention to his work" items.

It isn't difficult to get agreement on the statement that quality of visual environment is important in school buildings. There is wide disagreement, however, as to what constitutes a good visual environment. The emphasis up to now has been on putting more and more footcandles of light on the working plane. Over-emphasis of this approach, however, has been discredited by valid research. After a level of approximately twenty footcandles has been reached, other factors than intensities take control of visual comfort and efficiency. In other words, after relatively low intensities have been reached, the amount of light on the task does not control how well we see.

A good visual environment depends upon producing

brightness-balance. One side of this balance is task brightness, the other side holds the high and low brightnesses found in a 360-degree visual field. If brightnesses are within prescribed tolerable differences (check Guide for Planning School Plants, published by the National Council on Schoolhouse Construction, George Peabody College, Nashville, Tenn.) a good visual environment for comfort and efficiency is established.

A rough idea of the kinds of quality level choices to be made in this area of school design today can be gleaned from the general statement that desirable brightness-balance limits maximum lighting fixture brightness to 350 footlamberts and eliminates direct, uncontrolled 2 viewing of the sky. These conditions can be met simply and economically with today's materials and know-how. They usually are not met because of the confusion relative to acceptable practice and because a good visual environment costs more dollars than a poor one.

The cost of an inadequate classroom visual environment in terms of educational opportunities in today's visual world is too obvious to need discussion. The physiological cost to occupants, not widely appreciated, is an energy story of dramatic proportions.

The total physical energy of the body is like one large pool supplying energy as needed for all the bodily functions. When one bodily function takes more than it should from this central pool, less energy remains to serve other functional needs. Dr. Charles Sheard when on the staff of the Mayo Clinic estimated that with good eyes and under good seeing conditions a human being uses one-fourth of his total energy resources in the visual process. With imperfect organs of sight or poor seeing conditions or both, one uses more than one-quarter of his total energy resources for seeing. Add to this the large percentage of school time when critical seeing tasks are being performed and the importance of providing classroom occupants the best visual environment we possibly can becomes apparent. More recent research by Blackwell at the University of Michigan is establishing the quantity and quality requirements for good lighting for various kinds of visual tasks. Dr. Mead's work at Tufts College is re-establishing, through modern research techniques, earlier findings in the area

of the physiological cost of seeing. Work going on at U.C.L.A. will consider the problems of the visual, thermal and auditory environments and their integrated relationships to building design. Reduced quality level in this element of the school plant can visit serious physical handicaps upon the occupants we compel by law to use it. Unwise dollar choices here may easily impair normal growth and development patterns in children.

The auditory environment must also be properly conditioned for comfort and work efficiency. This is taken for granted in such spaces as the auditorium and speecharts laboratories, but often it is ignored as a real problem in classroom design. The "educational opportunities loss" when sound control techniques are ignored in school buildings are reflected by distraction from work, restlessness, lack of a reasonably quiet climate for study, apparent disorder, an uncontrolled tempo of activity and the poor behavior patterns such an environment sets up. The value of the instructional dollar goes down by sizeable drops when design choices rule out adequate sound control. The great amount of verified engineering data available in this area makes it inexcusable for any architect to design a school building which ignores good sound-control practice. The physiological cost in physical energy lost by forcing attention to hearing tasks in an acoustically poor classroom is both measurable and considerable; it can be reduced virtually to zero by good planning and wise selection of materials rather than increased dollar costs.

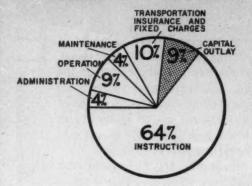
Another important factor which helps set a good standard of living for occupancy is color, not only in conditioning the visual environment, but also because it carries as big a psychological wallop as the friendliness of a building's design. Children understand color and react to it. They may not be as sensitive to hue and chroma as some seem to think they are, but the proper selection and combination of pigments can make the difference between "belonging" and "not belonging" to many children and adults. The cost in dollars is time and competence, not materials. The whole psychological attitude of occupants toward school buildings is a matter too complex to be a part of this article. It should be of far greater concern than it apparently is for many who make quality level choices. It has far greater

² The new neutral-low transmission glass now available makes direct viewing of the sky through it comfortable.



New Austin Elementary School, Edna, Texas; Caudill, Rowlett, Scott & Assoc., Archts. Quality level of structural systems depends more on how materials are put together than on increased dollar cost. Here, walls divorced from vertical supports can be placed as dictated by the demands of space to be enclosed

Dewey Mears



Capital outlay, 9%, includes building construction; 4% has to cover all maintenance. Poor building quality means stealing funds from instructional program for increased maintenance

dollar-cost implications than most laymen appreciate.

Last to be discussed under quality level for occupancy will be utilities. High standards of cleanliness relative

will be utilities. High standards of cleanliness relative to the person and the environment depend upon provision of water in classrooms. Many instructional materials also require use of water. Gas and electric outlets in the right number and places to serve program needs; a separate electric circuit for audio-visual equipment needs for each classroom; inter-communication devices for direct, effective administration and to provide immediate contact with the larger community of which the classroom must be a part, so there will be the interaction which is essential to learning — these are measures of the standard of living.

Any compromise which would deny a good standard of living for occupancy as defined in the foregoing paragraphs should be made with thorough understanding of the full price paid for it. Whatever the dollar cost of the school, the expenditure of *any* money on it cannot be considered a sound investment unless the building provides a suitable environment for the activities and processes which must go on in it.

QUALITY LEVEL and CONSTRUCTION

This is measured roughly in terms of the life expectancy of buildings and their maintenance rating. If a school building is to be useful at least until it is paid for, serious thought needs to go into the choices made in this area of design. The real issue is the cost of moving out rather than the cost of moving in.

Architects are far better able than the writer to list materials and technique choices which determine the quality level of school plant construction. Roofs, floors, walls, finishes, hardware, doors, structural systems, etc., are available on a quality scale of from zero to one hundred. One of the basic assumptions for school planning, established by many years' observation and personal experience, states that "a poor school district cannot afford to build cheap buildings. The only place money can come from to pay the constant, excessive maintenance costs of cheap construction is out of funds intended to buy a good instructional program. If these already over-stretched funds are not used to maintain buildings, the cheap school plant soon disintegrates into a health and educational hazard for the students we compel by law to occupy it. The physical environment of the school controls to a large degree the efficiency of teachers and students living and working in that environment. Because of this fact, it must be assumed that a reasonable capital outlay investment to provide an adequate physical environment is a necessity if we are to protect the much larger operational investment we make in our schools."

A state-wide financial analysis of California school districts was made for the fiscal year 1950-51. Concerning expenditures, it was found the school dollar was spent as follows: Administration 4 per cent; Operation 9 per cent; Transportation, Insurance and Fixed Charges 10 per cent; Capital Outlay 9 per cent; Maintenance 4 per cent; Instruction 64 per cent. Following this analysis, discussion with school administrators indicated that the 4 per cent spent for maintenance usually did not bear much direct relationship to need; it was what little was left after the other budget commitments were met. Maintenance items relative to the plant, for example, sometimes had to be deferred year after year since other budget items had to be met and plant maintenance items could be deferred. Discussion also brought out the opinion that the only way the maintenance budget could be increased would be to take the increase out of the instructional program. Thus, we find that the quality level of construction affects the educational program of schools directly; the lower the essential maintenance costs, the more can be spent on the instructional program.

In our justified concern over the hows, whens and wheres of the huge schoolhousing job which is with us now and will be with us for years to come, we MUST remember there is much more to cost than money. "Sacrifice, loss and penalty" far beyond the reach of the dollar sign must be evaluated when quality level choices are being made. The school plant is an integral part of the educational program. It is also a positive or a negative factor in the formation of the growth and development patterns of students. Children and teachers are people, and they are extremely sensitive to and affected by the physical environment in which they live and work. As responsible officials proceed to make decisions about school plant problems they must realize that the school building has to be more than a shelter from the elements, more than a series of unrelated spaces where groups of students may be taught. They must evaluate the relative importance of all the design features of a school building before they finally determine what quality level of building to sponsor.

3 SCHOOLS BY THE SAME DESIGN TEAM

With explanations by the Architect and Educational Consultant of some of the factors involved in their planning THE TEAM

Warren H. Ashley Architect

Marchant & Minges Engineers

Charles A. Currier & Associates
Land Planners

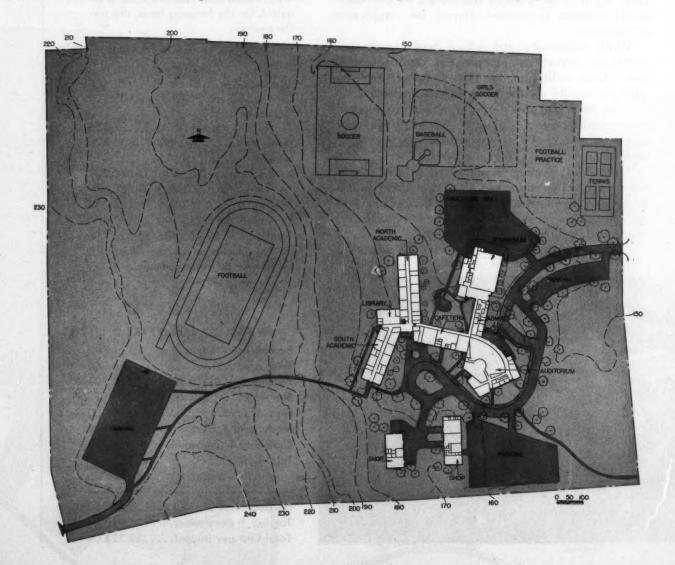
Engelhardt, Engelhardt & Leggett Educational Consultants

1-SENIOR HIGH SCHOOL, WEST SPRINGFIELD, MASS.

Educational Consultant N. L. Engelhardt, Jr.: "Increasing numbers of people are visualizing the school as a social, recreational and educational center for the entire community, raising the level of community goodness for family living. The old standardized lessons have given way to a broader program more in tune with the times and local requirements. Local

demands vary — each school should be tailored to meet them.

"Basic to good planning is a carefully detailed program setting forth both school and community needs, as well as an estimate of how these are liable to change in the near future. The thinking of many people is often incorporated into such a program.



1-WEST SPRINGFIELD (Continued)

"West Springfield, a town of over 20,000, is primarily industrial in nature but surrounded by large rural areas of farms and new housing. The school building committee leaned heavily in the planning process on the superintendent, Stanley Wright, who thus became a key figure in the development of the program. Emphasis in teaching would be directed towards practicality in subject matter and in terminal education, rather than in the academic subjects.

"Since two previous projects had been voted down, it was agreed that a conservative design was necessary in order to avoid argument on relatively unimportant points. The need was critical; another failure would be disastrous for the community.

"Thus, the architect's beginning proposal for a campus type plan was revised in favor of a scheme in which the units were pushed together into a more compact grouping — this in order to secure a favorable vote in the meeting. Essentially, this is a unit plan school with the differences in scale, flexibility and economy that might be expected with a compacted plan. Much of the planned functioning of the educational program is retained despite the compromise arrangement.

"Both community and school needs emphasized vocational, recreational, and physical educational units and a large auditorium for 1000 as major units. No adequate facility for the latter existed in the town.

"The finest facilities for interscholastic basketball games were required, resulting in a large gym with spectator space, excellent accommodations for visiting teams, and adequate access and parking.

"A general program of industrial arts is offered, since neighboring Springfield offers specialized courses in its large technical school. The growing demand for agricultural instruction led to the establishment of a course and facilities for it in the program."



Architect Warren H. Ashley: "More contractors compete in the bidding when the units are smaller, more manageable. On a large two-story high school I designed, four out of 17 interested builders dropped out because of the building's size. This school comprises approximately 140,000 sq. ft. Despite a comparative analysis based on preliminary schemes (one compact—one open) the committee chose the more conventional parti.

"In computing areas, we have held to the formula required by the Connecticut Department of Education, which stipulates that attics, pipe-tunnels, and crawl spaces be excluded; and that for rooms for boiler, janitor's work, basement stores, fans, and for unenclosed but covered porches one half actual area be used. We include covered walkways in the latter category.

"Our educational area figure includes spaces devoted to administration, teaching, auditorium, music, gym and lockers, cafeteria and kitchen. We reason that if there is no gym, no lockers are needed—if there is no cafeteria, no kitchen is required. On the foregoing basis, this was the analysis:

PRELIMINARY COMPARISONS

"Thus, adoption of the open plan might have saved the community \$340,-700 for other purposes."

WEST SPRINGFIELD

Educational Area	111,703
Total Area	154,340
Building Cost @ 10.89\$	
Site work	281,173
Fees	156,400
Mechanical & Electrical	560,099
Equipment & Contingencies	311,427
Total Cost	
(@ 19.80 per sq. ft.)\$	2.910.000

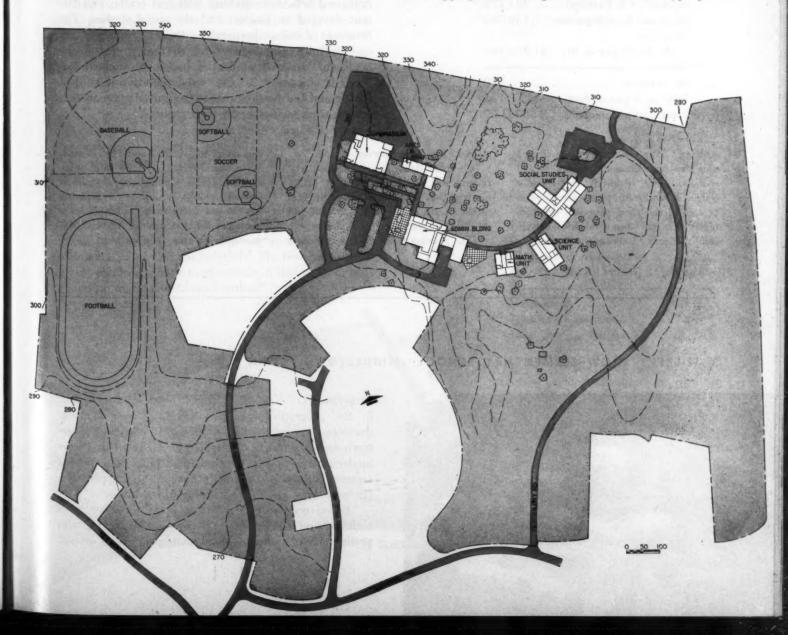


2-EDGEMONT JUNIOR-SENIOR HIGH SCHOOL, GREENBURGH, N. Y.

Engelhardt: "Edgemont has for many years sent students on tuition to neighboring Scarsdale and Bronx-ville High Schools, and after rejecting various plans for consolidation, decided to build its own secondary school. The community was more conscious of its needs than most—due to the long established activities of a Citizens' Committee working under the guidance of Principal William Moyle. For this reason the program was clean-cut and the referendum successful.

"Economy and simplicity were essential, since the entire bonding capacity of the district was required. Inasmuch as 93 per cent of the students would attend college, total emphasis was placed on academic subjects, with the understanding that those requiring other training would be sent on tuition to other schools.

"The beautiful 72-acre site is located in a heavily wooded residential area and is characterized by rock outcroppings and changes in level. A unit type plan





Perspective View of Cafeteria Terrace

EDGEMONT

56 463

Educational Area
Total Area74,192
Building Cost, @ 12.83\$951,500
Site work
Fees107,829
Mechanical & Electrical 334,172
Equipment & contingencies150,000
Total Cost
(@ 24.32 per sq ft)\$1,804,986
No. students550
Total sq ft per student135
Total Cost per student \$3281.00

Ashley: "The committee decided on a unit plan since maximum flexibility and economy were required. The corridor congestion and traffic past teaching areas typical of the rigid plan will be eliminated. On this beautiful site, a walk from one unit to another will provide a

pleasant interlude between classes.

"Complete flexibility of interior partitioning will free areas to meet future needs as they arise, while the addition of further units at relatively low cost will take care of increases in enrollment.

"The growing trend to separate junior.

other by their nature."

and senior high school activities is readily accommodated by the unit plan, which provides common major facilities

for both groups as well as the separate

spaces and home-room atmosphere so

necessary in making the 12- and 14-

year-olds feel that they 'belong.' "

2-GREENBURGH (Continued)

offered the chance to build with minimum excavation by placing the units on natural contours and adjusting elevation differences by ramps and steps in the covered passages between.

"Early in the program it, was decided that recreational facilities should be devoted to participants, not spectators. There was no ambition in the direction of competitive interscholastic sports.

"Since a large auditorium was provided by the elementary school, this one was conceived as a little theater seating only 300, designed for adult amateur groups as well as for the school dramatics program.

"At present, high schools are being organized on one or the other of two concepts: the first dividing the elements by subject; the second developing broad areas against which all subject matter might conceivably apply. Many unit schools contain within each unit facilities for a cross section of important subjects — a step towards complete integration.

"At Edgemont, the units are developed in terms of integration at two levels: the workshop center, including industrial arts, homemaking, arts and crafts; and the unit devoted to English and the social studies. The demands of college preparatory training require study and drill in the subject field, so that much of the traditional departmentalization had to be retained.

"It is of interest to note that integration of subject matter and the development of the unit plan for schools complement each other by their nature."

3-WILBERT SNOW ELEMENTARY SCHOOL, MIDDLETOWN, CONN.



Engelhardt: "This is a neighborhood school, located in the geographical center of several new housing developments for families of moderate means. Middletown has a number of small schools, inadequate for modern needs and located on small plots. This school represents the first break with that pattern and provides the prototype for future building in the area.

"Based on the concept of a plant to serve both children and adults for total community service, the preliminary planning involved many people and several agencies, including the Board of Education, the Park Department, and the Library Board.

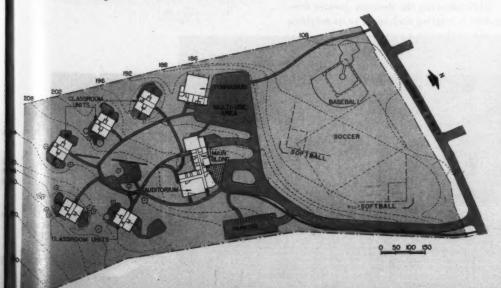
"The library is designed for joint use by students and townspeople, and will become a branch of the town library open during the evening hours when the school is closed. It is located near parking areas for public convenience.

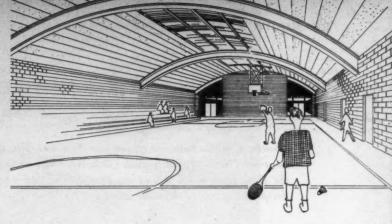
"The city Park Department and Board of Education have established what is probably a new high in public cooperation by preparing a formal agreement concerning joint use of the school grounds — an agreement which is outstanding and might well set an example for other communities. The Park Department appropriated \$25,000 to implement its share of the site work. The agreement provides that baseball and football fields, tennis courts, and gymnasiums, as well as the locker and toilet facilities for same, shall be 'available to the public for use under the supervision and direction of the Park Department . . . except when in actual use by the school . . .' In addition, the site offers picnic areas, an arboretum, and hiking trails for community use.

"Again, the key figure in the development of this unusual plan was the school superintendent, Creighton Magoun, who was heavily instrumental in the development of the program.

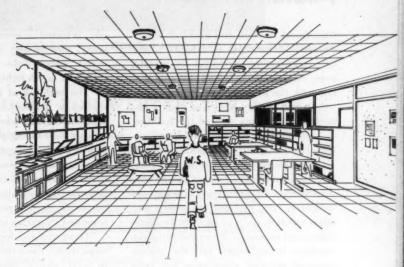
"The site is a beautiful, heavily wooded slope of 25 acres, part of an old estate. The woods will be preserved as a sanctuary for birds and small animals and will be used for nature study. What better environment for learning than the true expression of one of childhoods greatest interests — that of growing things?

"Before the unit plan was adopted, it was presented to a citizens' meeting for discussion and approval. The unit scheme seemed proper for reasons of economy and amenity. Each basic unit of four classrooms will house two grades at present, but will lend itself admirably to a changed concept of grade levels should that occur in the future. The unit idea works particularly well for elementary schools where nearly all activity occurs in the homeroom. There are few occasions for pupils to leave except at lunch time, either to go home or to visit the cafeteria. The few complaints against children having to go outside in bad weather fail to hold up under close consideration."





Gym interior



Library area

MIDDLETOWN

Educati	onal Area
Total A	rea46,191
Building	Cost, @ 10.39 \$479,998
Site wo	rk58,158
Fees	45,194
Mechai	nical & Electrical202,750
Equipm	ent & contingenties 52,000
Total C	ost (@18.14 persq.ft.) \$838,100

No.	st	ude	ents															600	
Tota	ı	sq.	ft.	P	e	r	-	st	U	d	e	n	ŀ.					.74	
Tota	ıl	Cos	st p	e	r	5	h	10	le	er	ıt						\$ 1	397	

Ashley: "In a typical community, the school building committee is faced with the problem of constructing, under a limited budget, a school plant that will serve future as well as present needs. Even as the educational program must be flexible enough to cope with changing emphasis and new techniques, so must the physical plant be capable of meeting population changes and program revisions with a minimum of disturbance and expense.

"The need for schools that are both



Illustrated on this page is a typical four classroom unit, which will be constructed by the lift-slab method. Clockwise: above, elevations; at right, the plan; right below, typical detail of exterior wall section; bottom, perspective of typical classroom interior

3-MIDDLETOWN (Continued)

economical to build and based on sound educational concepts is evident — and the conscientious architect is making every effort to bring school planning into line with the best thinking in the educational field. Every penny of cost is important, and every foot of the building and the plot not actually used for educational or community function is suspect.

"The campus concept is new for public schools (although colleges and private schools have long consisted of separated structures on planned grounds) and offers much in the way of amenity, flexibility, and economy. Accessibility to the outdoors is important, and the advantages of outdoor classrooms has been recognized for some time. Such areas are a 'natural' in a unit plan; experimental gardens and outdoor dining for the Home Arts group, painting and drawing outdoors for art students, outdoor work areas for shops — all these are practical, even in New England.

"A shutting-off is required for many activities, such as summer sports, basketball games, dramatic performances, and others. An adult program, contrariwise, requires opening-up, shops, science, the gym, etc. Heat and light are required, as are accessibility and parking. Isolation is less expensive than acoustic treatment, and is also the most efficient fire barrier.

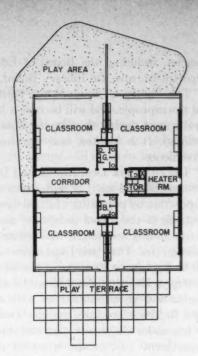
"Each room should be located for best group functioning, and should be properly oriented—social rooms, gym, library, and biology rooms for sun; art rooms, science labs, shops, and health rooms for north light.

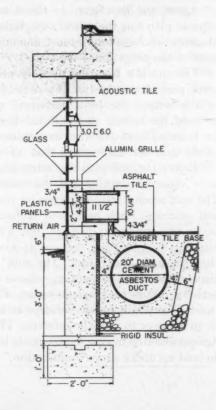
"The building of additional space in the future is easier and cheaper in selfcontained independent units; does not disrupt the existing plant so seriously. A logical planning approach is to separate the components, group them accordingly to common needs, locate and orient them in accordance with function. The resulting small structures tend to possess a scale and character suitable for youth.

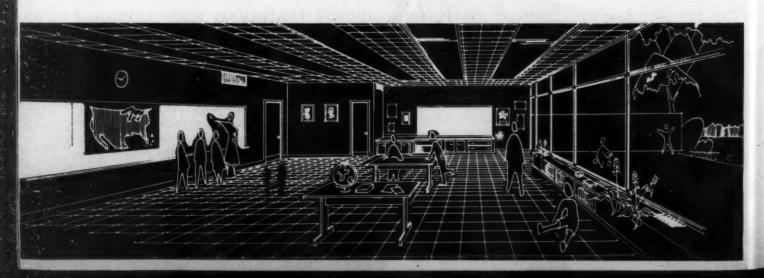
"Using the site for circulation dilutes cross traffic, eases the hazards of changes in level, and is cheaper than building corridor space. Units constructed in accordance with natural contours minimize excavation and foundation work. Toilets and storage areas can be located where needed, not fitted into odd corners and intersections in the plan.

"Units can be designed for special function or for economy through duplication. They can be built at once or individually as required — those for a particular age group or educational function can be added without throwing the arrangement of the school out of gear.

"By the simple device of separation, the unit plan achieves efficiency, fire safety, control, flexibility and economy; while allowing the designer greater freedom in relating each room to its neighbor and to the site as a whole."









MODEL, TOWER STREET ELEMENTARY SCHOOL

TWO "CLUSTER" SCHOOLS FOR WESTERLY, R. I.

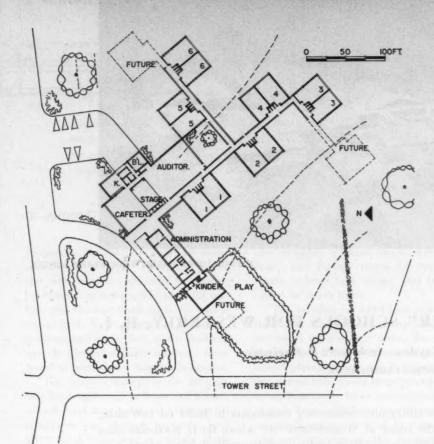
Harriman, Willis & Hayden, Architects & Engineers Leo Doherty, Educational Consultant

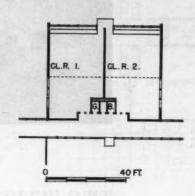
Westerly, R. I., had thirty-one elementary classrooms to build on two sites, one at Tower St., the other at Westminster St., where fairly good-size sites were available. The building committee had no predetermined ideas of style or solution for their problem; they were willing for the architect to investigate all possibilities. A total of 13 different schemes was developed before a basic idea for each school was agreed upon. The Westminster St. School was first tried as a single-loaded-corridor plan, with the upper three grades separated from the lower three. The wings stepped down the gently uniformly sloping lot, offsetting at regular intervals.

The Tower St. site, on the other hand, was hilly; that there would be expensive rock excavation was evident. The architects suggested a cluster scheme with each unit set at a convenient elevation and with all connected by green-house-like, lightly built, semiheated corridors which ramped freely up and down the slopes. The committee's reaction was favorable. In particular they liked the neighborhood character of the buildings, their human scale and home-like atmosphere; the scheme's adaptability to the site; repetition of small units, which would encourage small local contractors to compete for the contract; ease of future expansion by merely adding clusters (mechanical facilities are sized to accommodate additions); and the outdoor facilities: paved play spaces, teaching and assembly areas sheltered on three of four sides by buildings or corridors.

MODEL, TYPICAL TWO-CLASSROOM BUILDING

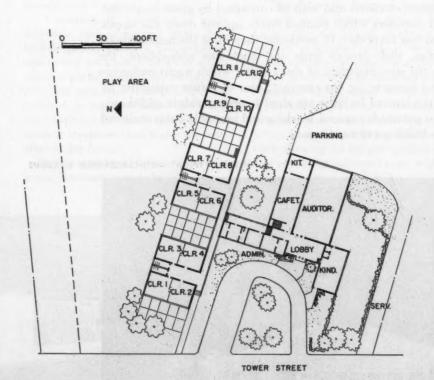


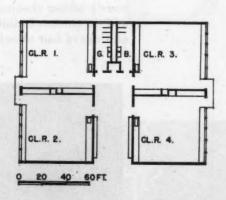




Cluster Type	Cluster Area—Sq Ft	CI Rm Area—Sq Fr	Mech. Core & Toilets Sq Ft	Circulation Per CI Rm Sq Ft	Connecting Corridor* Lin Ft	Total Circulation & Corridors* Sq Ft
4 CI Rm	4560	900	80	160	270	3810
2 CI Rm	1968	918	33	33	320	2636
2 CI Rm vs 4 CI Rm			- 47	- 127	+50	- 1184

^{*} Based on 12-class room schem

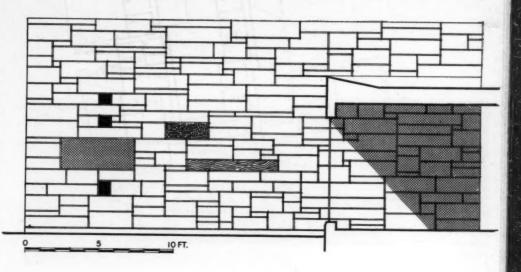


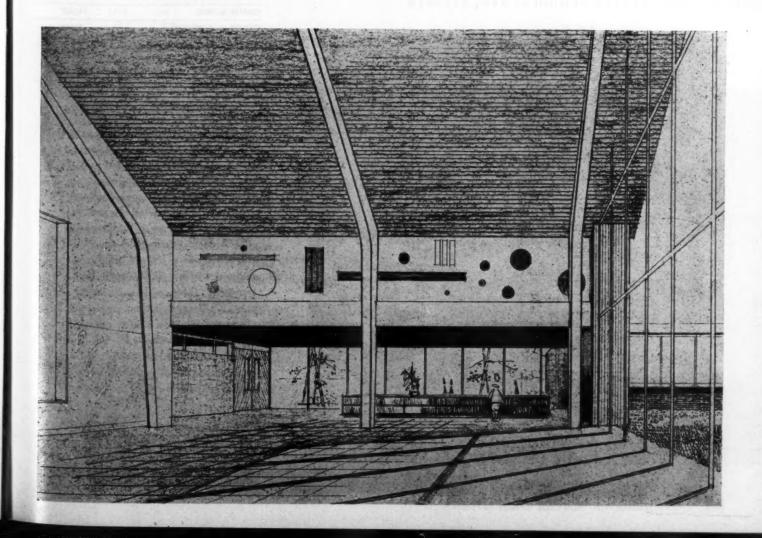


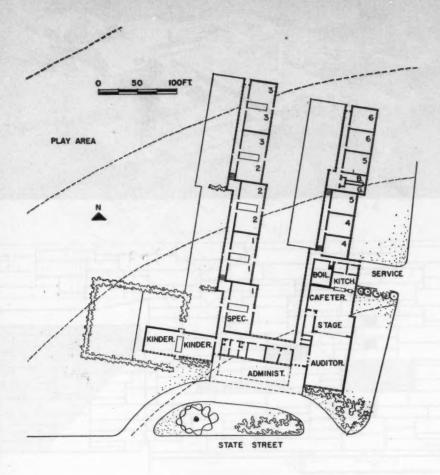
In developing the cluster scheme for the Tower St. School, units of two classrooms were found more flexible and efficient in use of space than 4-classroom units (see table on facing page). Among the 2-room unit advantages are: greater ease of adaptation to the site; less circulation and corridor area; simpler lighting problem; natural light (important in New England) on two sides of each classroom, providing flexibility in orientation and permitting low ceilings more in scale with the children; 2-room units need not make classrooms face each other (the 4-room units would have, thus creating distraction and hampering teaching).

At the main entrance to each school is a granite wall (right) in random ashlar of rock and seam-faced stone, with polished, colored pieces projecting from the neutral ashlar background to form a mural quite appropriate in a granite country. These will be lighted by spots from the canopy roof. Cafeteria and auditorium in each school (below) have laminated wood arches carrying a 4-in. wood deck; stage is between the two rooms, at Westminster a low-ceilinged library adjoins and becomes part of the cafeteria; the bright mural above it is to be painted by a local sign-painter

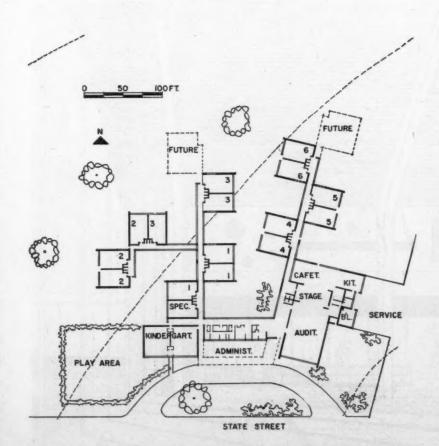








RHODE ISLAND CLUSTER SCHOOLS: WESTMINSTER



For the Westminster Street School, although the site, less rugged than that at Tower Street, was a less obviously compelling factor, a comparison was made of the initial single-loaded corridor scheme with a cluster scheme composed of two-classroom units (see tabulation below). If the comparison's results were not too far out of line, there might be an over-all saving since both schools were to be built at once and increasing the number of repetitive units might reduce the total contract cost.

Results exceeded expectations; the cluster scheme showed substan-

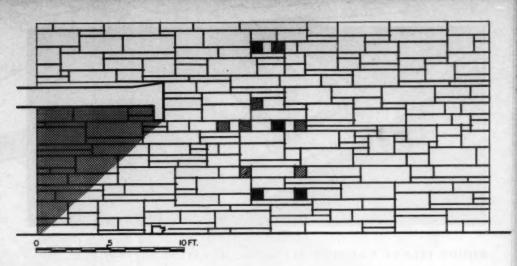
Type 18 Cl. Rm.—2 Kind. Ee.	Area Sq Ft
SINGLE-LOADED CORRIDOR	38,200
CLUSTER SCHEME	34,300
CLUSTER vs. CORRIDOR	-3,900

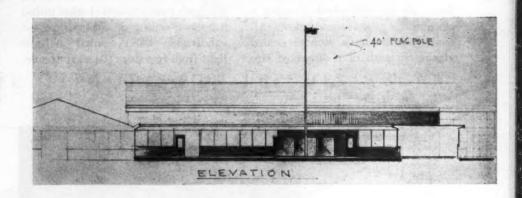
tial area savings due to the compactness of the units as a whole and particularly of each unit's service area, with unit heaters above in the attic space; and due also to dual use of cluster circulation space and corridors as well as of library and cafeteria space. Thus, though the reasons for doing so at Westminster were somewhat different, both schools were developed as cluster schemes and were sent out for bids early in September, 1954

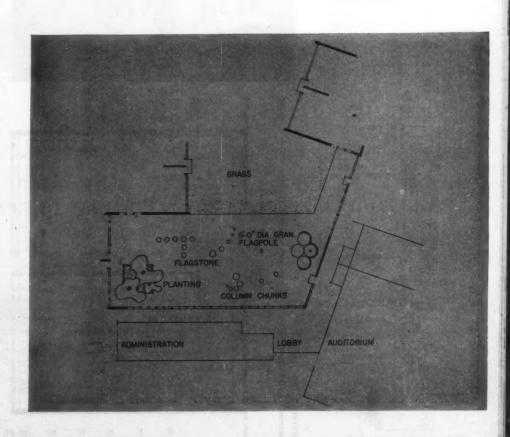
Westerly, as we have said, is a "granite town"; in past years its quarries flourished. The granite entrance wall and mural used at the Tower Street School was repeated at Westminster Street, with a different motif. At Westminster the attempt at decorative and practical use of granite was carried further. Available at a local granite yard were many discarded shapes: discs 6 ft in diameter, short chunks of columns, flat slabs, cubes and many others of no particular description. It was decided to use four of the large discs as an outdoor stage for assemblies in one of the sheltered courts; these also would become a setting for the flagpole, and they would be backed by a redwood screen shaped to their circular forms. All of this is indicated in the drawings at right and below. Other chunks of granite are being used as stepping stones, seats and play sculpture.

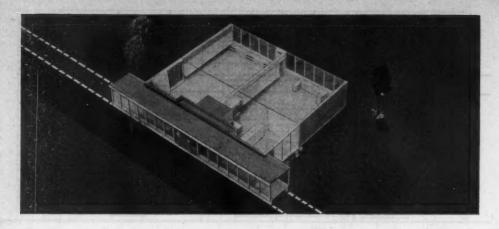
Perimeter Lin Ft	Partitions Lin Ft	Corridors Lin Ft
1904	2288	765
2319	1740	685
±415	-549	-80

Of the buildings other than classroom units, the auditorium and cafeteria at Westminster, like those at Tower Street, have laminated wood arches, a 4-in, wood deck, sidewalls of brick, granite, wood stud and glass, and a concrete floor slab on fill. Administration and service areas are of wood joist construction with brick, stud and glass sidewalls and a concrete slab floor. All buildings are heated by a hightemperature forced hot water system feeding individual heating and ventilating units; mains run under the corridor floors and supply what heat the corridors need. Corridors contain no lighting fixtures inside, but are illuminated at night by the outdoor flood lights which light the grounds. Details of classroom clusters and corridors are shown on the following pages









RHODE ISLAND CLUSTER SCHOOLS: DETAILS

Clusters have wood roof trusses resting on 3 bearing walls—two exterior and one the central partition—and concrete slab floors. Corridor floors are pre-case plank forming a continuous pipe space below. All heated areas have double sealed glazing in sash of a standard size

VARIES

BRICK SILL

TERRAZZO

THROUGH CLUSTER CORRIDOR

PIPE SPACE UNDER CORRIDOR throughout, a detail which meant considerable saving in both drafting time and construction cost. Each classroom has movable wardrobes, teacher's cabinets and storage units; a floor-to-ceiling movable drape for subdivision when wanted; natural light from two sides (84 sq ft at side,

SOUND INSULATION

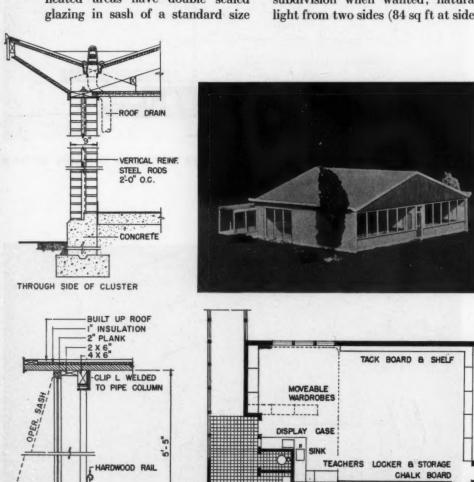
VENTILATING SILL

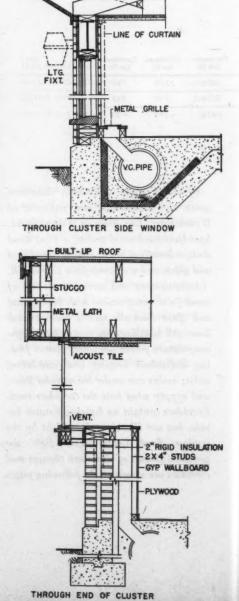
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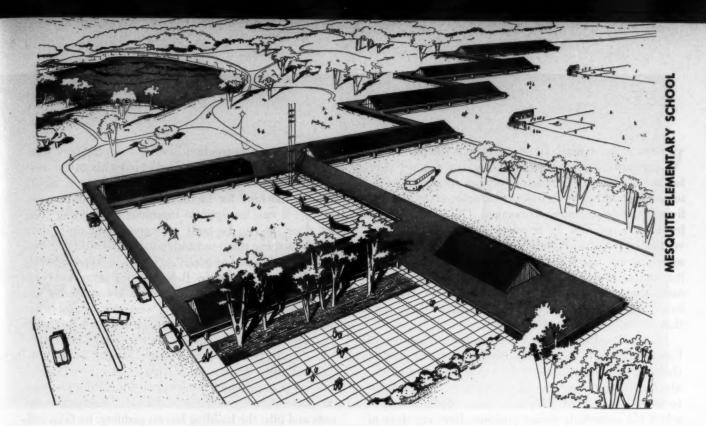
CURTAIN TRACK

110 sq ft at end); low ceilings, white with indirect lighting in seating area; tinted with direct lights in project area; 2-sink work counter; art shelf, display panel, display cabinets.

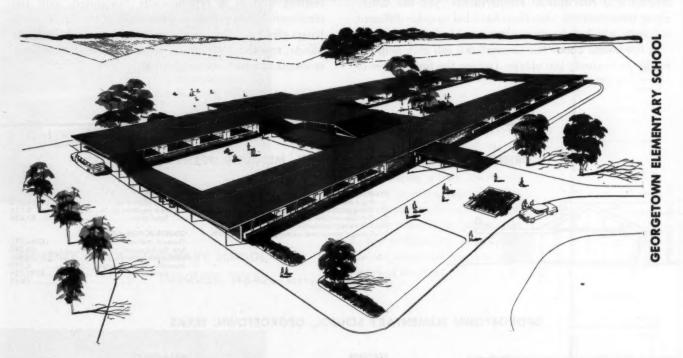
In all there are 31 classrooms (18 at Westminster, including 2 kindergartens; 13 at Tower including 1 kindergarten) and each school contains a multi-purpose room, cafeteria, lobby, administration offices, kitchen, boiler and storage rooms. Bids were opened Sept. 27, 1954; the low bid was \$960,442; at 62,031 sq ft total (Westminster 34,271; Tower 27,760) and 943,368 cu ft total, this came to \$15.42 per sq ft or \$1.02 per cu ft. These figures may be slightly reduced by taking certain alternates. Without utilities, the buildings are costing \$14.75 per sq ft, \$0.97 per cu ft.



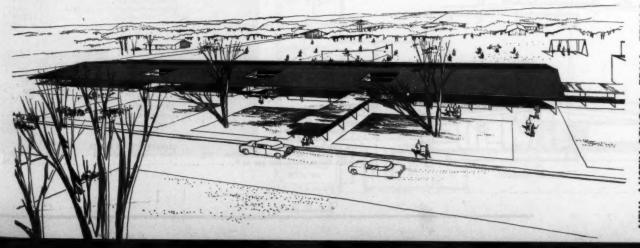




THREE APPROACHES FOR THREE TEXAS TOWNS



CAUDILL, ROWLETT, SCOTT & ASSOCIATES, ARCHITECTS



NEW AUSTIN SCHOOL, EDNA, TEXAS

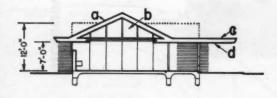
What is research? In one sense it is the pursuit of perfection; in architecture, working toward perfection of design techniques, development of new ways to make buildings more functional, more attractive for living and working, more economical. The pursuit ranges from such specifics as developing new lighting and ventilating ideas to finding new uses for old materials, searching out improved means of insuring safety and low maintenance costs, of improving existing structural methods and perfecting new ones—in short, research in architecture is a thought process aimed at the perfection of man's physical environment.

Architectural research is fundamental to the work of Caudill, Rowlett, Scott & Associates. Even the least of their more than fifty school jobs, whose costs range from about \$30,000 to well over \$1 million, is carefully studied to determine exactly which of many approaches best solves the immediate design problem. Here are three of their recent schools, all with much the same environmental and educational requirements; yet the differences between their situations have led to quite different concepts which yet achieve comparable results.

A few words about the Georgetown job may help the reader to evaluate the others. During the final stages of Georgetown's construction one of the plumbers said, "Doesn't this school feel good?" That's about the best compliment a school can be paid; it can be a highly efficient machine for facilitating the curriculum (this one is); it can incorporate ingenious daylighting (this one does); it can be built economically of up-to-date materials using advanced techniques (this one is) — but if children don't "feel good" in it, it will have failed as schoolhouse architecture. Before Georgetown was completed those who put it together knew it would feel good; the children and teachers who now occupy it not only know the builders were right, but know also that it "works good." Here is proof that obtaining satisfactory school plant facilities and getting the most for the educational dollar are not incompatible.

Some ways in which Georgetown got full dollar value: its classroom wings ride the contours, avoiding excessive cuts and fills; the building has no padding, no false ceilings, no hidden structure, no expensive heated halls; the heating system is economically integrated with the structure, which even forms the walls of the ducts; overhangs eliminate first cost and maintenance of shades or blinds; repetitive structural units permitted expedient, economical construction methods.

FLORENCE BLACK ELEMENTARY SCHOOL, MESQUITE, TEXAS

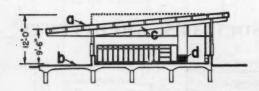


PEATURES	
A-Rigid steel frames 24 ft o.c.	
B — Glass gables distrib te light	
C-Outdoor corridor & sc control	5
D-7-ft eaves, residential scale	
E Cubana saved over costenaviar section.	250

Contract let: February 1953; cost per sq ft......

WHEN ING LIL						
Enclosed, heated @ 1						28,518
Covered corridors @ 1/2.			 			9,136
Total area						37,654
	-	ķ.				
CONSTRUCTION COSTS						
General contract			 	 	\$2	96,721
Site development				 		22,885
Kitchen equipment						13,830
Movable cl rm equipment.						
Total cost					\$3	37,159
 			 			. \$8.95

GEORGETOWN ELEMENTARY SCHOOL, GEORGETOWN, TEXAS

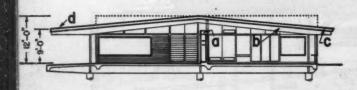


FEATURES
A-Large sun-control overhang
B — Outside corridor
C—Laminated wood girders
D—Hot air heating unit
E-Cubage saved over rectangular section: 109

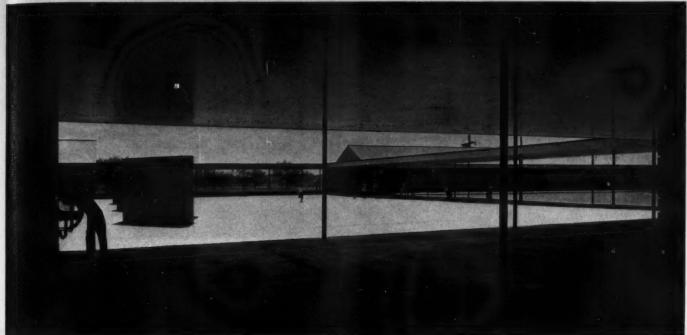
tract let: May, 1952; cost per sq ft

AREA (SQ FT)																
Enclosed, heated																
Covered corridors																
Total area													32	2,7	27	7
CONSTRUCTION	e	4	21	57	r											
General contract												\$ 2	56	5,4	18	9
Site development									۰				15	8,9	00)
Total cost												\$ 2	76	5,2	18	3
													- 4	0.5	44	٤

NEW AUSTIN ELEMENTARY SCHOOL, EDNA, TEXAS



FEATURES	AREA (SQ FT)
A-Integrated utility core	Enclosed, heated @ 1
B — Laminated wood girders	Covered corridors @ 1/2
C-4-in, wood deck, 14-ft span	Total area
D—Outdoor corridor & sun control	
E—Triad plan grouping of classrooms	CONSTRUCTION COSTS
F — Cubage saved over rectangular section: 13%	Total general contract
Contract let: March, 1953; cost per sq ft	****



Ulric Melse !

COVERED PASSAGE

CLASSROOM

CLASSROOM

CLASSROOM

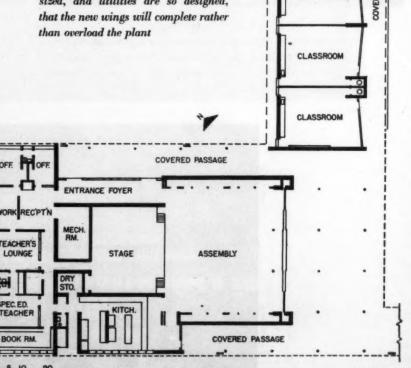
CLASSROOM



FLORENCE BLACK ELEMENTARY SCHOOL, MESQUITE, TEXAS



Flexibility of the Mesquite school is assured by the elimination of interior bearing partitions in classroom wings; school population growth can be accommodated by adding more classroom wings to the present chassis, whose administrative unit is so placed and sized, and utilities are so designed, that the new wings will complete rather than overload the plant





At Mesquite, Caudill, Rowlett & Scott have ingeniously used ' solid walls and dwarf walls to achieve scale, to direct traffic and as windbreaks separating outdoor areas (see also preceding page)





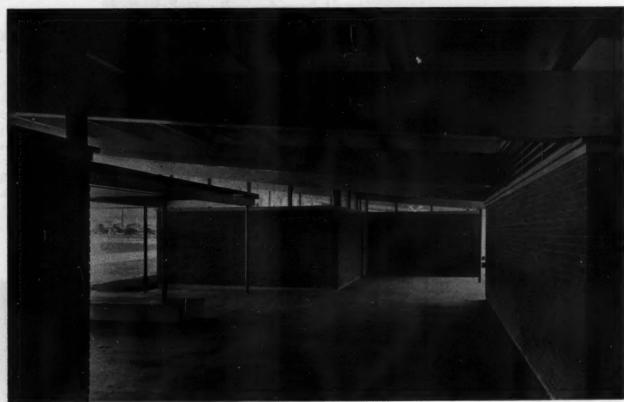
Above, classroom; right, classroom; below, multipurpose room in main unit, for assembly, eating, physical ed; large stage, not visible, is for audio visual classes; overflow seating is accommodated by opening the glass wall



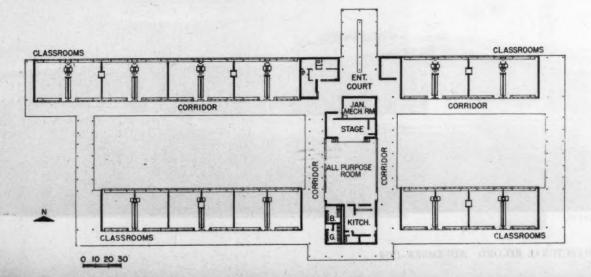




GEORGETOWN ELEMENTARY SCHOOL, GEORGETOWN, TEXAS



Dewey G. Mears





At Georgetown, laminated wood girders, exposed wood purlins and roof deck cover even the walks which, rambling up and down grade, enclose courts between wings



Similar construction at Edna's New Austin School produces an umbrella roof



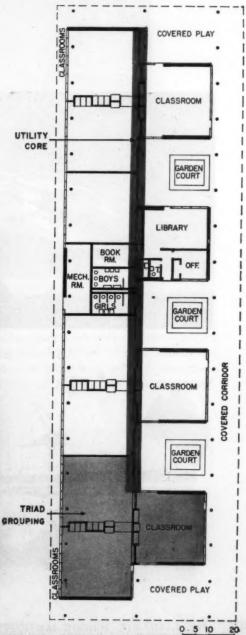




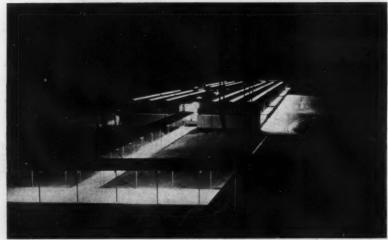
NEW AUSTIN SCHOOL, EDNA, TEXAS

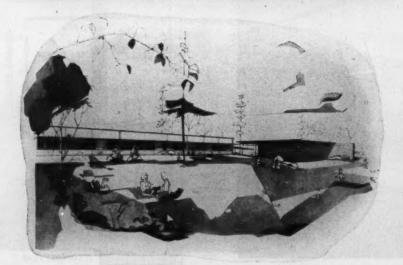
What Caudill, Rowlett, Scott and Assoc. call a "triad" plan is used at Edna. Its purpose: to provide complete through ventilation for all classrooms, eliminate interior corridors while retaining advantages of a double-loaded corridor scheme, provide outdoor classrooms and play spaces sheltered from the hot sun. In addition to an existing plant, this is connected to the old buildings only by a covered walkway at one end.











AN AWARD WINNER LAI

Architects: Bassetti, Morse & Aitken

Engineers: Structural, Stevenson & Rubens; Mechanical, G. S. Troberg; Electrical, B. B. Lezin; Civil, H. W. Merritt; Acoustical, P. A. Jacobsen

Landscape Architects: Eckbo, Royston & Williams

Color Consultants: Mary Bassetti,
Emily Morse





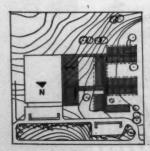
Art Huny

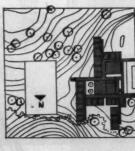
ER LAKEVIEW SCHOOL, MERCER ISLAND, WASH.

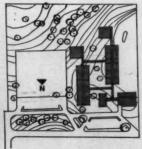
The architects tell us that, in designing this school (which won an Award of Merit at last June's A.I.A. convention), the emphasis was first on fitting the site, second on designing for the Puget Sound climate, third on directness and simplicity in plan and structure. "Limited funds and community distrust of ostentation had a most salutory effect." The architects strove to integrate space requirements, structure, hearing, seeing and mechanical aids to comfort. They are as satisfied as good designers ever are with scale and proportions of

classrooms, interior of the multipurpose room, variety of exterior courts and views (which will be even more evident when the future classroom building and playshed are built) and with the gay, varied colors. All this came hard, as the result of painstaking study and restudy. Planned for 20 classrooms eventually, 10 now (300 pupils), the school meets pre-stated educational requirements for: rectangular rooms (% for seating, 1/3 project space), no work alcoves or outdoor classrooms (yet doors out from all classrooms), compact plan.

A few of many site development studies; final plan at right









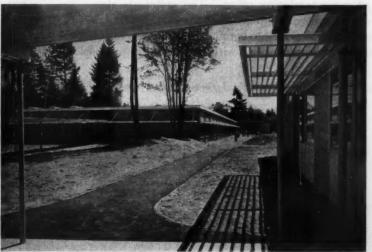


Art Hupy

Lakeview School is an example of economy of means in its over-all plan and its details. The basic elements are simple: classrooms, multi-purpose section, administration, library, covered play shed, mechanical plant. Each has its own appropriate form, loosely or closely connected to the others as its use dictates. Outdoor areas between buildings are also carefully designed as to size and use, relating closely to the building entrances. No design element, building or outdoor area, is larger than necessary. Elements which work tightly together are joined. Units separated yet connected by covered walks were easily adapted to the sloping site.

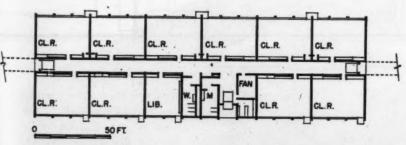
The first stage of construction, now built, contains ten classrooms, library, multipurpose and music rooms, administration, boiler and electrical buildings, covered play shed, well, underground storage tank, sewage disposal system. Including mechanical, electrical, plumbing and site work, this cost \$300,900, or \$11.50 per sq ft. At present costs, when the remaining ten classrooms now planned for are built, unit cost should drop to \$10.50 per sq ft. Included in these figures are many items not normally part of the charges: pairing, walks; well, pump house and buried water tank; 60 by 60 ft covered play shed, etc. Cost of these was \$47,300, over 15 per cent of the total.







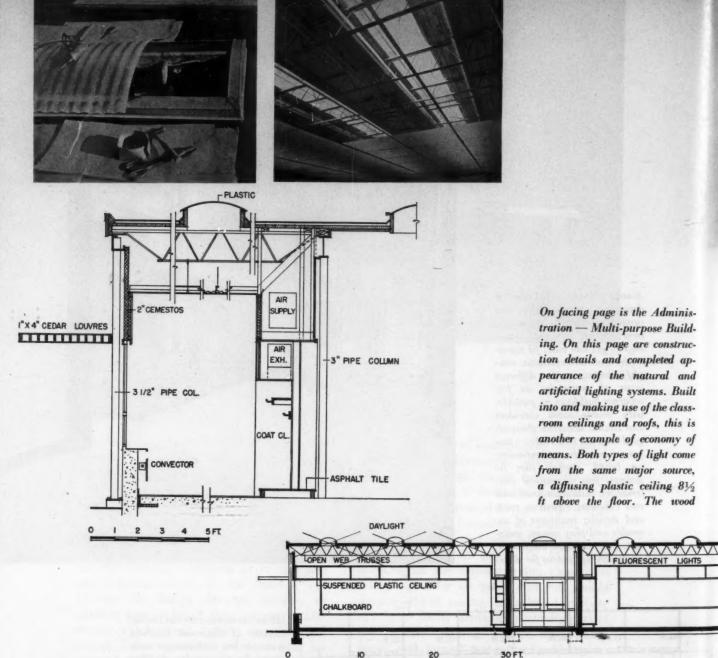
Among principles followed in designing the building and producing working drawings: clear, careful, minimum drawings to get low bids; fit topography and site conditions; simplify shapes; use few different types of materials; as few separate buildings as possible, with double-loaded corridors and similar activities grouped; good wearing materials - masonry, concrete, cement-asbestos board, asphalt tile; no gadgets, few mechanical contrivances; minimum wood trim and cabinets; repetitive parts and details; multi-use of assembly and play spaces; space-saving in administration unit; minimum equipment for stages



Above, classroom corridor; below, exterior of classroom building, a simple box with straight walls except for the weather-shielding recessed entrance. Structure, as for all buildings, is light steel frame on concrete slab, block walls, insulated wood roof deck

Photos on facing page show classroom building, administrative unit, play shed, and the carefully proportioned outdoor spaces which they delimit. Maintenance and operating economies are expected from the lighting system (see following page), split heating system (widely spaced floor coils plus fin-tube radiation), painted block walls, aluminum sash

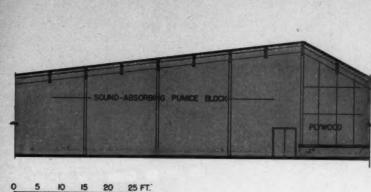


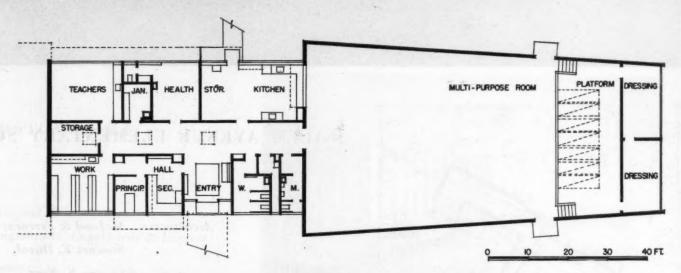


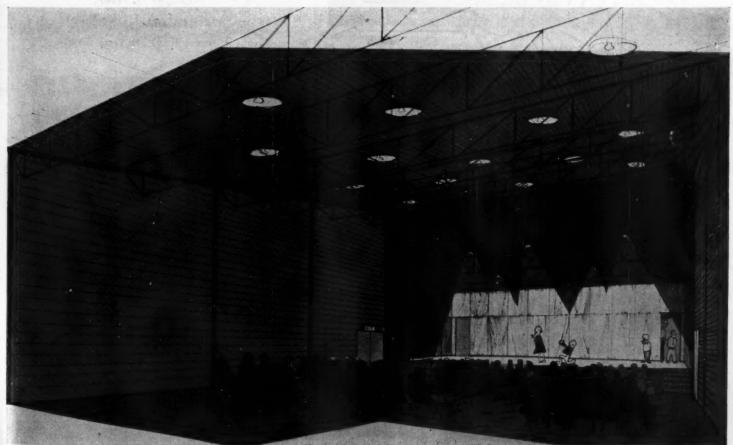


plank roof 21/2 ft higher contains three parallel strip skylights full length of each classroom; crossways of the skylights are attached. In addition to even, 40 foot-candle lighting (without artificial lights even on gray days), the low ceiling provides a nonmonumental, human scale. Initially the installation was expensive; in 20 years its low operating cost is expected to compare favorably with an incandescent system. Meanwhile, the school offers children a good visual environment

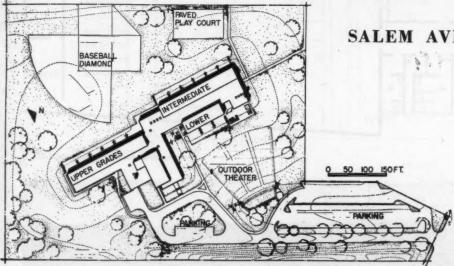












Salem Avenue School contains 15 classrooms, a library, kindergarten, general purpose room (exterior photo below) and kitchen

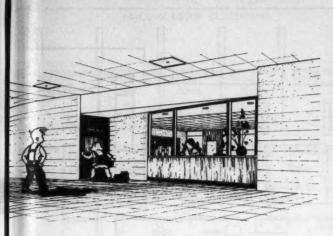


SALEM AVENUE ELEMENTARY SCHOOL,

McLeod & Ferrara: Architects: Stewart E. Duval, Casper S. Neer,

Associates

WINNER OF A SPECIAL award in the most recent School Executive competition and most favorably commented on at the Atlantic City exhibit conducted by the American Association of School Administrators, this is an example of full development of an urban school site. Relatively small, far from level, the site was difficult to utilize well. Good orientation, separation of the age-groups indoors and out (even to providing a private play yard for the kindergarten, and a substantial amount of parking space were achieved. The fireresistive, steel-framed building has a poured gypsum roof deck, brick and painted stucco exterior walls, painted cinder block partitions, acoustical tile ceilings, Korina doors and cabinet work. Color is gaily used. The building (K-6) accommodates 450 students, cost \$627,895 (excluding land, furniture or fees); contains 46,055 sq ft or 658,199 cu ft. Unit costs: \$1,395 per pupil; \$13.62 per sq ft; \$0.95 per cu ft.





"Space-framed" display units (above) in the widened exhibition portion of the corridor

HAGERSTOWN, Md.

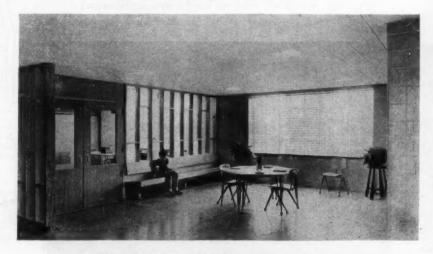
Educational Consultants:

Engelhardt, Engelhardt & Leggett

Engineers:

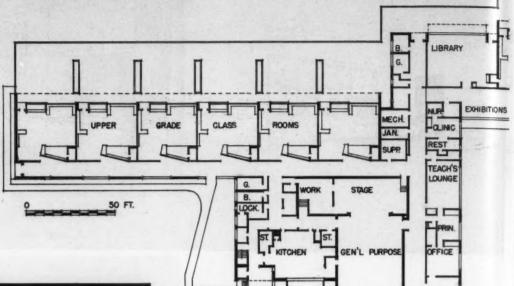
OL,

Structural, J. G. Loehler; Mechanical, C. Warren Bogan



Above, waiting room, administration area; below, multipurpose room with rigid steel frames





Fred J. Maroon

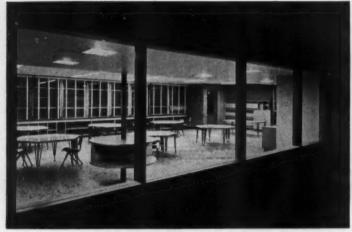
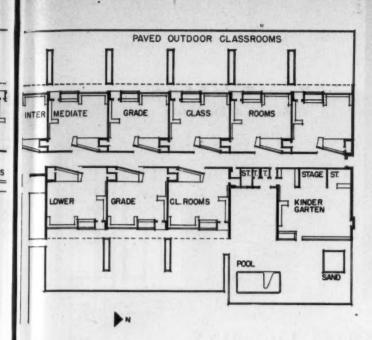
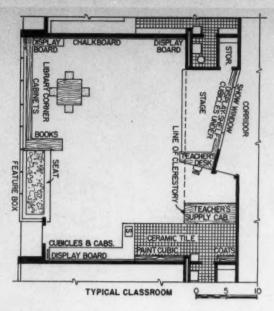


Photo at left shows library, viewed from corridor. Below is kindergarten; alcoves at rear are for (left to right) coats, stage, storage space. Note daylighting plastic domes used in this deep room

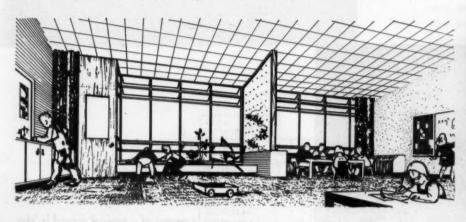
STORAGE







Above, plan; below, photos and drawing of typical classroom. Low-ceilinged area adjoins corridor; clerestories light inner side of squarish rooms









Magney, Tusler & Setter, Architects & Engineers

JUNIOR-SENIOR HIGH SCHOOL, RAMSEY CO., MINN.





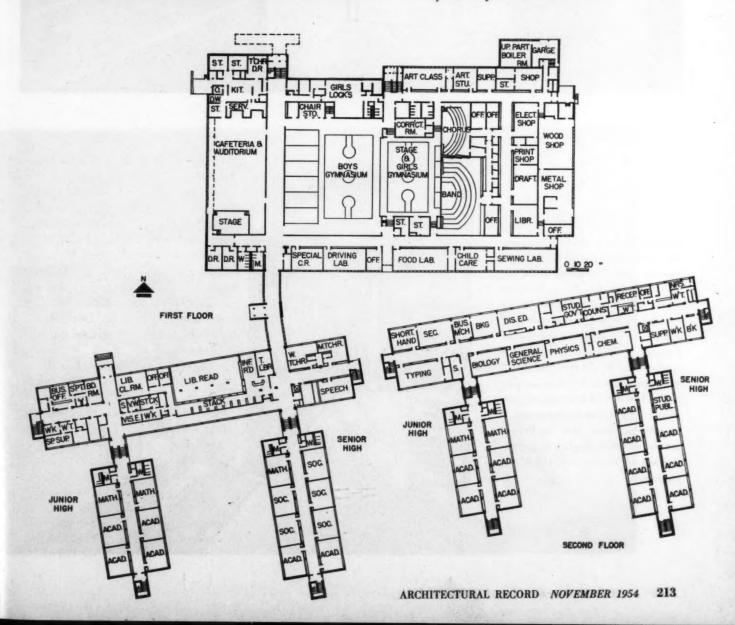
A 1954 School Executive competition, the Alexander Ramsey Junior-Senior High School is organized in four wings, one for junior high, one for senior, one containing gymnasium, cafeteria and shops with their related facilities, and a central unit housing the facilities common to both age groups. This last, and the classroom wings are two stories, built of reinforced concrete with the first floor slab laid on grade. Gymnasium building, steel-framed, is described on subsequent pages.

This is the first new high school in Ramsey County, a fast-growing suburban residential area just north of St. Paul, in 25 years. Prior to the school's opening in September, 1953, students were transported to St. Paul's high schools. Part of a \$4½ million school building program, the Ramsey high school is designed for 1,500 pupils; will serve community needs as well (there is no community auditorium in the district); occupies a 40-acre site with full athletic facilities. Its cost was \$2,548,045 (total), for 206,621 sq ft or 2,648,155 cu ft.





The careful organization of the school plant into separate units (which not only facilitates their functioning but also brings the plant into humanly manageable scale) emphasizes the importance of the corridors





Library, shown on this page, has special area (right) for periodicals and research easily supervised from the librarian's station. Throughout the school, which was designed on a modular basis, finish materials were selected for durability as well as appearance; stair treads and floors in heavy-use areas are terrazzo; glazed structural units are used in corridor walls. Acoustic tile is extensively employed. Heating-ventilating system is fin-tube radiation plus mechanical ventilation, with supplies in peripheral tunnels and vertical risers 8 ft on centers

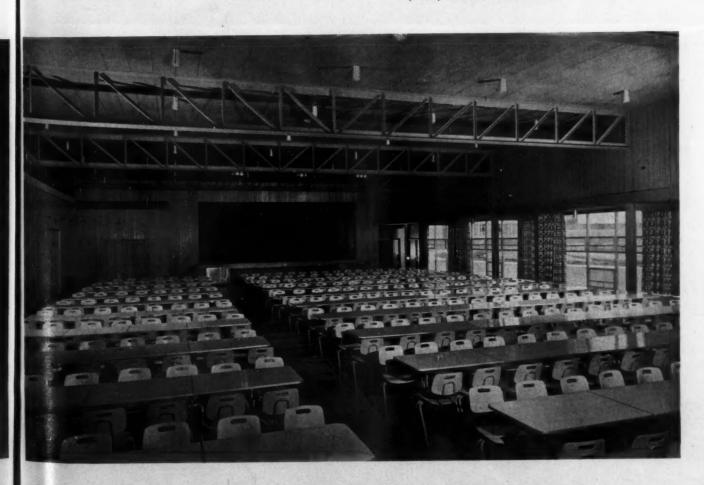


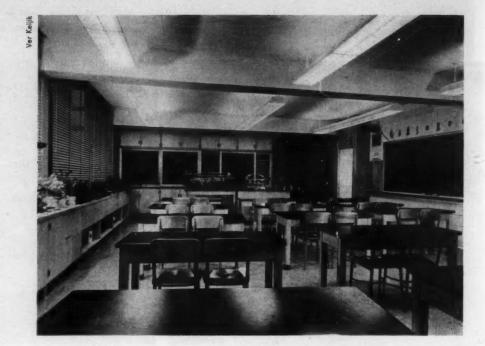
Gymnasium — cafeteria — shop building is steel-framed; six rigid frames span the gym space. Shops are along outside walls; gym-





nasium bleachers seat 1500 and when chairs are set up on court floor for a stage performance, capacity is increased to 3000. Stage is also girl's gymnasium. One special classroom has been set aside for driver education. Cafeteria (below) is also an auditorium.





The two classroom wings contain 12 and 16 classrooms, respectively; rooms in all 3 academic buildings are much the same as the science room at right. Below is the band room in the gymnasium building; its angled walls are surfaced with acoustic absorbents; the entire area is organized in plan and detailed in construction to minimize the difficulties that noise might produce



THIN SHELLS

In two previous articles on thin shells their structural behavior, their commonly used forms and their stress analysis were presented from an intuitive viewpoint. ("Structural Behavior and Forms," July, and "Effects of Loads and Forces," September.) In this final article some typical and some extraordinary realizations of thin shell design are presented, and material and construction problems are considered.



EXAMPLES HERE AND ABROAD

By Mario G. Salvadori Professor of Civil Engineering Columbia University

THE FIRST APPLICATION of thin shell construction to reinforced concrete goes back to 1910. But it was only in the 1920's when Carl Zeiss of the Zeiss Works in Jena, Germany built a small barrel roof on 4 columns, that construction of this type began to expand rapidly under the guidance of U. Finsterwalder and F. Dischinger. Their studies led to the Zeiss-Dywidag patents on thin shell barrels, in which the reinforcing bars were placed along the theoretical lines of principal stress. The Dywidag patent rights for the United States were acquired by Roberts and Schaefer, who were responsible for the first reinforced concrete barrel shell hangars built in the United States in the 1930's. Ammann and Whitney promoted thin shell design independently in the United States and have produced a large number of original shell designs since 1930.

The original development of saddle surfaces is mainly due to the studies of French and Italian engineers (among them Aimond in Paris and Baroni in Milan), who popularized this type of shell starting in the late 1920's in France and in the early 1930's in Italy. Torraja has used them in Spain and Candela in Mexico since 1940.

Prestressed concrete was used in thin shell design by Professor Magnel of Belgium and popularized in the United States by the Preload Corporation.

Tile roofs of the thin shell type are extremely popular in European countries, particularly in Italy and Germany, and have been built in a variety of forms since 1920.

Steel shells have been commonly used in tank construction the world over for the last 50 years and wooden roofs are popular both in Great Britain and the United States.

This brief historical survey shows that thin shells are anything but new, and that a wider use of this method of construction is justified not only on theoretical grounds but on the basis of past performance. In what follows we shall concentrate our attention on reinforced concrete roofs, and give only a few examples of the use of other materials.

Barrels

The first shells built of reinforced concrete were of the barrel type, and for many years this shape was virtually the exclusive form adopted for shell roofs.

Cylindrical shells are classified as short or long barrels since these two types differ essentially in structural behavior. Short barrels have a length L not greater than their radius R and quite often much less than this (down to R/5or R/10). They hang from arches (or ribs) in the form of circles, ellipses, parabolas, or in the shape of the "funicular line" of the dead load of the roof. (This shape minimizes bending stresses in the arches.) They have been used frequently for hangar construction in the United States with spans up to 340 ft, and ribs spaced at about 30 ft. Their thickness varies with the span but is usually 31/2 in. for spans up to 280 ft with increase in thickness to 5 or 6 in. near the ribs. The same type of short repeated barrel has also been used successfully to cover large halls and arenas. An interesting variation of the short ribbed barrel consists in cantilevering the shell outward from two consecutive stiffeners, creating an element which is separated by expansion joints from adjoining identical elements.

In an original application of ribbed barrels, the Onondaga County War Memorial, Syracuse, N. Y., the arches are supported by "gallows" in order to increase their span while reducing their thrust. The short barrel shell with stiffeners may also be used to cover non-

rectangular areas as in the Livestock Coliseum at Montgomery, Alabama.

The twin hangar built in Marseilles, France, in 1952, which is of the short barrel type, has barrels arched in the short direction so that stiffening ribs are unnecessary. The shells span 305 ft and have a thickness of about 2.4 in. This design appears to be an improvement over the usual, ribbed short barrel, which inefficiently utilizes the potential structural properties of shells: the short shell acts more like a flat slab supported by the arches, because of the small span and the large curvature.

The long barrel shell, which also hangs from stiffeners, behaves like a beam of curved cross-section and can be used to cover large areas. Spans of up to 328 ft in length with a radius of 41 ft have been employed. There are also barrels of intermediate size. For example, a hangar in Münich, Germany, has a barrel 236 ft long with a radius of 65 ft.

"Funicular curves" are most common in large short barrels, while long barrels usually have circular cross-sections, although elliptical cross-sections are adopted at times to increase the enclosed volume.

A particular type of barrel developed in Germany combining somewhat the advantages of shell construction with simplicity of forms is the polygonal "hipped plate" barrel. These barrels develop fairly large bending stresses and, therefore, cannot be classified as pure membranes. In a hangar now being planned the "hipped plate" barrels are combined so as to create a corrugated surface which cantilevers out from the structure and is supported by means of tension cables. This combination of thin shell, hipped plate, steel cable construction presents most interesting possibilities structurally and economically.

In the applications presented so far,

half-cylinders are often the standard roof element, but interesting structures have been built by means of portions of cylinders combined in a variety of ways. Cylindrical shells with considerable rise, meeting at right angles have been adopted at the St. Louis, Mo. airport.

The "butterfly shell" consists of two cylindrical sectors cantilevered from a row of central supports. It is a standard element in railroad platform roofs. It can also be successfully used to build hangars, in which the central portion is for services and the cantilevered roof provides airplane shelter area. Moreover a butterfly roof built by means of repeated elements permits the introduction of large glass areas and hence the easy daylighting of large buildings. The problem of daylighting has also been brilliantly solved by cutting the barrel with a vertical plane, which is completely covered with glass or which is left open, as in the Nervi shell at Chian-

In Mexico Candela employed a large, unsymmetrical cylindrical sector to roof a private house. For a factory he combined half-cylinders at different heights and placed glass surfaces at the ends of the cylinders.

The same problem may be solved also by means of inclined cylinders generated by a half-circle sliding along an inclined line. It is possible in this manner to obtain a shed type structure of the multiple barrel type, although this solution does not seem the most economical.

The direct inclusion of glass in barrels, which is permissible in view of the low shell stresses, is currently accepted, and in some cases up to 50 per cent of the shell area consists of glass. In all shell regions where stresses are compressive, glass bricks can be incorporated in the shell without difficulty, giving freedom of light patterns in daytime and at night, since concealed lights are also easily incorporated in the shell. This can be said, of course, of any shell and not only of cylindrical roofs.

Shells of Revolution

Domes of circular or polygonal shape, in which a thin shell is carried by meridional arches, are typical of church construction and are also used to cover large halls up to 400-ft diameter. In at least one structure of this type the dome is supported by "gallows" rather than by columns to create the necessary hoop force around the boundary of the shell without relying exclusively on tensile steel. But it is in industrial tank con-

struction that spherical domes have become most popular. Diameters of up to 150 ft with rises of $\frac{1}{16}$ in. to $\frac{1}{16}$ in. and thicknesses of 2 in. at the top increasing to 5 in. at the boundary are quite common.

The unribbed dome of revolution, circular or elliptical in cross-section, has been recently adopted by two outstanding architects. Saarinen conceived the M.I.T. building as a spherical sector, cut by a triangular vertical prism, obtaining an elegant form of monumental appearance: the diameter of the shell is 170 ft and its thickness is $3\frac{1}{2}$ in. for 80 per cent of the dome area and 24 in. at the supports. The shell is thicker than might be anticipated since the cuts disturb the membrane stresses, introducing bending stresses throughout most of the shell.

Noyes has adopted an elliptical shell of revolution with either two or four inclined cuts in his design of houses and campus type schools which have diameters up to 45 ft with a thickness of 2 in.

Special Shapes

Hyperbolic paraboloids for covering large factory areas were built by Baroni in Milan, Italy in the 1930's with great economy of forms. In his applications, Baroni, following the French approach, coupled four very flat hyperbolic paraboloid sectors, obtaining a structure limited by triangles at the boundaries. These triangles are trusses capable of taking the shear forces of the shell and of transmitting them to the columns by means of direct stresses.

The hyperbolic paraboloid sectors used by Baroni can also be turned upside down and supported on a single central column, or combined in a variety of ways.

In contrast, the hyperbolic paraboloids built by Candela to cover the Cosmic Ray Laboratory of the Ciudad Universitaria in Mexico City have a very high rise and are limited by parabolic arches 16 ft apart, with a span of 33 ft. Their thickness of $\frac{5}{6}$ in. required for the penetration of cosmic rays perhaps makes this the thinnest shell built of reinforced concrete. Flat, single, complete conoids have been recently built by Candela, but the sector of conoid is ideal for shed roof construction and has been extremely popular in France and Italy during the last three decades.

It is also possible for a sector of hyperbolic paraboloid (of the type used by Candela) to be cantilevered out and supported on one of its bounding parabolas. A solution of this type was adopted by Torraja in the Madrid race track roof.

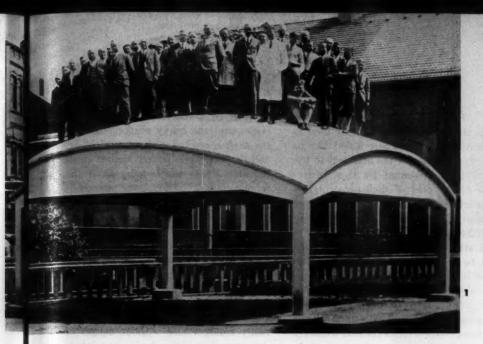
Although in this article thin shells have been referred to exclusively as roofs, it is interesting to notice that perhaps the most daring application of thin shells occurs in dam construction. A new type of double curvature dam has been developed in recent years by engineers Oberti and Rocha on the basis of mathematical and model studies. Its dramatic applications in the Alps show heights of up to 883 ft, spans of up to 500 ft and thicknesses varying from 10 ft at the top to 50 ft at the bottom. Such structures are considered thin in view of the tremendous pressure supported. Another "hydraulic" application of concrete thin shells, by now very well known the world over, is the lovely ketch built by Mr. Nervi with a shell only 1/2 in. thick.

Materials

YEAR TO DO THE

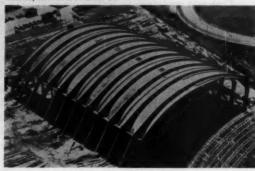
Concrete. The use of reinforced concrete is standard for large shells. The reinforcement consists usually of steel bars, but welded steel net of mesh sizes varying between 2 and 4 in. is becoming more and more popular in view of the ease with which it is put in place. The complicated arrangement of reinforcement along the lines of principal stress, typical of the early Zeiss-Dywidag patents, has been practically abandoned. For relatively small shells and even for large shells of small thickness (up to 3 in.), pneumatically applied concrete is gaining popularity over poured concrete. It results in a more homogeneous, stronger, monolithic construction, which allows smaller thicknesses and a reduction of the dead load of the shell, in most cases the most important load on the roof. Pneumatically applied concrete can be placed rapidly and sets rapidly. with the additional advantage of freeing the forms for re-use. Quite often it is possible to lower the forms 36 hours after spraying a 1-in. thickness of concrete, and to use the 1-in. shell as a form on which to spray the additional concrete required by the final design.

Prestressing is widely used in this country for the construction of thin shell concrete tanks for liquid storage since complete impermeability is essential in this type of structure. It is interesting to notice that almost all of the structures recently built by Dyckerhoff and Widmann in Germany and elsewhere combine thin shells with prestressing.

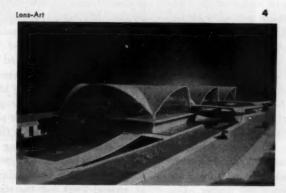


Courtesy A. L. Parme, Portland Cement Association

Courtesy Roberts & Schaefer Co.



1. Small barrel roof built in the 1920's by Carl Zeiss in Jena, Germany.
2. Hockey arena in City of Quebec; Caron and Rinfret, Architects; Roberts & Schaefer Co., Cansultants for shell roof. 3. Short barrel roofs for twin hangars in Marseilles, before being jacked up into place. 4. Airport Terminal Building, St. Louis, Mo.; Hellmuth, Yamasaki & Leinweber, Architects; William C. E. Becker, Structural Engineer; Roberts & Schaefer Co., Consultants for shell.
5. Alabama State Coliseum, Montgomery; Sherlock, Smith & Adams, Architects & Engineers; Ammann & Whilney, Structural Engineers. 6. House in Mexico, Félix Candela, Architect. 7. Factory in Mexico; Félix Candela and Rául Fernandez, Architects. 8. Garage in Nüremberg, Germany.



Courtesy American Concrete Institute





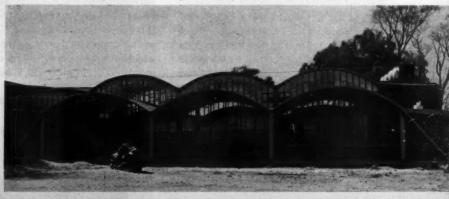
Courtesy American Concrete Institute



Horace Perry



Photo by Armando Salas Portuga from I. E. Myers, author o "Mexico's Modern Architecture"



Concrete really will be used to its best capacity and in its most rational manner when prefabricated, prestressed elements will become standard in the construction of thin shells.

Tile. Flat slabs combining tiles with reinforced concrete, in which the reinforcement is reduced to steel wires (diameter less than 0.1 in) and the concrete ribs are poured in forms created by the tiles, have been used in Europe for the last 40 years. During the last 20 years this method of construction has been adapted to shells in Germany, Italy and France.

Sheds of the concidal type, incomplete cylinders, multiple barrel roofs, and spherical domes spanning 25 to 50 ft have been economically built with hollow tiles less than 6 in. thick. The amount of steel for a flat dome covering a water tank 59.5 ft in diameter with a rise of 7 ft is only 0.48 lb per sq ft.

One of the most interesting applications of a tile thin shell roof is the flower market built in 1953 in Pescia, Italy, a flat barrel with large cuts, supported by arches forming buttresses. The span is 90 ft, the hollow tile thickness 8 in.

Steel and Aluminum. Tanks of steel sheet are commonly used in industry in the shape of cylinders with spherical or elliptical heads, of complete or incomplete spheres, and of "drops," presenting the interesting property of a constant stress under static hydraulic pressure. But steel shells were used also in France in 1929 for movable hangars in the form of barrels hanging from stiffeners. (The interesting saddle roof designed by Nowicki for the North Carolina State Fair Pavilion is a metal structure in which cables constitute the essential structural elements and thus cannot be classified as a thin shell.) The recently built LeTourneau semisphere, 310 ft in diameter and 85 ft high, capable of covering an area of 71,000 ft and seating 12,000 people, is made out of aluminum sheet 1/8 in. thick. It is probably the thinnest shell in the world to-day.

Wood. Although wood lacks the continuity typical of concrete or metal, curved surfaces can be easily built out of this material, particularly if they are of the ruled type. Outstanding wooden structures are in existence which cover large areas with spans of hundreds of feet, but none is of the "membrane stress" type, since numerous ribs stiffen the shell. (Lamella construction, not considered here, is of this type.)

Plastics. The writer is unaware of large shells in which plastics are used as structural materials, but would like to call the attention of the architect to the possibilities presented by these materials in the field of shell construction. Plastics with the strength of steel are at present available which can be molded into the most complicated shapes, welded and attached to other materials. They can be transparent or opaque. Plastics used in airplane construction are typical. While it may be uneconomical at the present time to build a complete structure of these materials, large plastic surfaces could be incorporated wherever the lighting problem or the shape problem becomes important. It is easy to predict that the increased production of plastics well adapted to construction purposes will add interesting possibilities to thin shell design.

Construction Problems

The greatest single obstacle to the expansion of reinforced concrete shell construction is the high cost of building forms. In the case of large barrels, complex scaffolding made out of wood or steel tubing must be erected and supported on jacks. Once a pour is completed, the heavy scaffolding is lowered by the jacks, shifted to a new location and jacked up again. This complicated operation must be repeated for each pour and it is rarely that the scaffolding can be used more than four to six times on the same job. The form structure must then be dismantled and shipped to a new site, if made of steel tubing, or disposed of if made of timber. The surface on which the concrete is poured is always made out of disposable timber.

The cost of materials and labor involved in building, shifting and dismantling the forms may be as much as one third of the total cost of the concrete structure even when the forms are used many times over on the same job. When the forms are used only once, this ratio may be higher.

The cost of forms for large shells of the barrel type, spanning 250 to 300 ft, varies between \$4.00 and \$6.00 per sq ft. Using the forms an average of six times, this gives a minimum cost of 67 cents per sq ft. In multiple barrel factory roofs, in which simple forms are used a great number of times, this cost is said to be at least 30 cents per sq ft. Hence any solu-

tion lowering the cost of forms is to be

In one of the solutions successfully

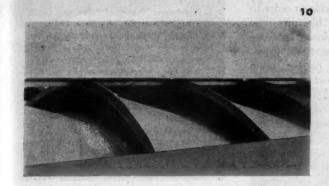
adopted by Dyckerhoff and Widmann (Germany) the heavy reinforcement of the shell is erected without scaffolding, and the concrete is poured against small movable forms which hang from the reinforcement.

For the 1952 Marseilles hangars, the numerous short, arched barrels were poured on the ground using the same form, and the barrels were then lifted in place. This combination of thin shell construction with prefabrication of the shell as a whole has economic advantages where labor costs are high and material costs low. Monolithic shells are easily transportable without danger of damage, while their pouring as a whole at ground level is practical and structurally wise.

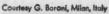
A series of barrels designed for use by the U. S. Army (15 by 30 ft) and the school shells by Eliot Noyes (45 ft in diameter) are designed so that they can be picked up and moved. The common use of heavy equipment in the United States should add further attraction of this method of construction, particularly in view of the popularity recently gained by the "lift-slab" system.

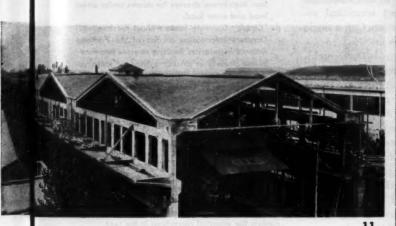
Prefabrication of small elements which are then assembled to create a thin shell has been perfected by Nervi in Italy. The Nervi element is itself a corrugated shell reinforced by layers of thin mesh and precast on the ground; the various elements are then put together on light forms, by welding the steel reinforcement and by pouring the joints. This method has the obvious advantages of prefabrication of standard elements at ground level and the elimination of heavy forms. On the other hand, it may require welding of the reinforcement and always requires local pouring of the joints. It is currently under study in the United States. Nervi's procedure is well adapted to an economy of low labor and high material costs.

Another entirely different solution of the form problem called the "Airform" method was initiated 12 years ago by the West Coast architect Wallace Neff and has been successfully applied to a variety of shells. A balloon of neoprene-nylon fabric in the shape of the shell inner surface is inflated by compressed air to a pressure of 6 lb per sq in. The steel reinforcement, usually welded mesh, is set on the balloon and concrete is shot against the neoprene form, completely engulfing the steel. Door and window frames are incorporated into the shell, by attaching them to the reinforcement.



Courtesy Standard Oil Co. N. J.





9. Steel storage tanks for an oil company in Maine. 10. Conoids for a transportation building in Rome provide daylighting; G. Baroni, Structural Engineer. 11, 12. Hyperbolic paraboloids for a factory roof in Milan; G. Baroni, Structural Engineer. 13. Model of a proposed classroom; Eliot Noyes and Associates, Architects. 14. Hyperbolic paraboloids cover Cosmic Ray Laboratory at University of Mexico City; Félix Candela and Jorge Gonzalez Reyna, Architects. 15. Doubly curved thin shell for dam in the Alps; G. Oberti, Structural Engineer. 16. Olympic Hall, Berlin, built in 1936, has shell roof with ribs from foundation to skylight; Professor W. March, Architect; Dyckerhoff & Widmann, Structural Engineers.





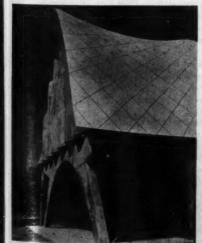


Photo by Armando Salas Portugal from I. E. Myers

Courtesy G. Oberti, Milan, Italy







Once the concrete is set, the balloon is deflated and taken out of a door or window opening, and the shell is finished by increasing its thickness, if necessary. A variety of technical problems had to be solved before the "Airform" method became practical. For example, the lowering of temperature due to a passing cloud could decrease the air pressure in the balloon, changing its shape. To avoid this an electronic pressure gage, controlled by a thermostat, is attached to the air compressor and puts into, or takes out of the form the amount of air necessary to maintain the pressure constant within very strict limits. Onefamily houses, grain storage tanks, ammunition huts and other types of structures have been built by the "Airform" method, all involving thin shells of reinforced concrete. Spans of up to 100 ft have been reached with thicknesses of 2 in. of concrete. Shells built by this method have been in existence for the last 10 years. Construction projects using "Airform" are expected to be started in the near future both in the United States and abroad.

Conclusion

When nature decided to shelter its most precious particle, the embryo, it created the egg shell, a shape of great resistance realizable with a small amount of material. A chicken egg shell will withstand a pressure of 75 lb; its diameter is approximately 1 in., its thickness about 15/1000 of an in.; its span to thickness ratio is 66 to one. A concrete barrel spanning 340 ft with a thickness of 5 in. sustains a greater unit load with a span to thickness ratio of 825 to one. The LeTourneau semisphere with a diameter of 318 ft and a thickness of 1/8 in. has a span to thickness ratio of 30,600 to one. Man has outdone nature in daring, and has produced securer shelters, since our shells are not as fragile as an egg.

The technical possibilities are here. The mathematician, the engineer, the builder have done their lot. But no building technique can be successful, even in our predominantly technical civilization, unless it is used to create a living structure, filling the deeply felt needs of the human beings who are to dwell or work in it. This is why, although the fundamentals of shell theory have existed since 1828, shells are only today being integrated into our lives.

The mission of the architect is indeed a difficult one. Artist by nature, he must become a master craftsman before his dreams materialize. Craftsman by trade, he must become a technician in order to understand and make his own the achievements of the engineer. In order to design shells he must think threedimensionally, and be a master, not a slave of geometry. He must know materials and their strength, be aware of stresses flowing in steel and concrete, be able to channel these stresses economically. He must have an eye for color and adapt his shell to its surroundings, while making sure that rain will not penetrate it, heat will not crack it, ice will not break it. He is aware of life inside his shell: he worries about acoustical responses and heat insulation. Can a single man encompass all this knowledge?

The present dichotomy between architecture and engineering is absurd and must vanish before long if we are to get the utmost out of our creations. In the statement of a leading architect, "architects are so outdistanced by engineers in inventiveness and resourcefulness that the engineers may soon take over their profession." A leading engineer objected to this remark; he felt that "engineering was potentially ahead of architecture, but that engineers were often, in his opinion, far behind architects."

There is a simple solution of this puzzling situation and it can be found at the roots of modern society. Today no one is "independent;" we all rely on each other for survival. The architect is just like any other modern man: he needs help. His main difficulty is to know at least the kind of help he needs. The engineer is ready to help, but on one hand his training is often so unimaginative that he does not understand the creative expressions of the architect, and on the other he is such an "exact," scientific person as to dislike problems that cannot be rigorously solved. Leaving aside the "handbook" engineer interested only in routine problems, and the "handbook" architect, who can only copy a preordained scheme, modern architecture needs the architect capable of grasping the fundamentals of structural design and the engineer willing to tackle new and unsolved architectural problems. Such persons exist, but only by rare chance do they come together. In the field of construction touched upon by these articles there is a crying need for more getting together of the brilliant architect with the daring engineer. A horizon of infinite possibilities is now open: the stay-at-home will be scared, the pioneer will feel attracted by it. The future is the pioneer's.

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Errata to Article 2

Professor Salvadori was unable to read proofs on Article 2, due to his absence from the United States during the summer. The following errata contain the essential corrections in the text.

- P. 213, Column 3. Line 8 from bottom of page: "T ϕ stresses on the cuts parallel"
- P. 214, Column 1. Title of second figure: "Diagrams of Maximum Stresses Due to Snow Load"
- P. 214, Column 2. Line 12 from bottom of page:
 "compressive and tensile stresses" should read
 "maximum stresses"
- P. 214, Column 3. Line 5 below "Stresses in Circular Shells": delete the word "shell" Line 2 below figure: "the radius of the parallel is R₂ sinφ,"
- P. 215, Column 1. Eq. (9) should read:

$$-2\pi \text{ wR}^2(1-\cos\phi)/2\pi \text{ R sin}^2\phi$$

Eq. (10) should read:

$$= -\operatorname{Rw} \cos \phi - (-\operatorname{Rw} \frac{1 - \cos \phi}{\sin^2 \phi})$$

Line 1 after Eq. (10): add "at the boundary" after " T_{θ} is tensile"

- P. 215, Column 2. Line 3 above Eq. (12) "along the center diagonals"
- P. 216, Column 1. Line 3 below the third figure:
 "a force Q_o toward the center"

Line 5 below the third figure: "bending stresses in its neighborhood"

Line 2 from bottom of page: "A study of the transverse shears created in the shell by boundary forces Q_o."

P. 216, Column 2. Line 4 below the figure: "will be applied by the ring to the shell boundary"
Line 11 below the figure: "have recently been obtained by the writer and his students for circular shells under conditions encountered most often in practice"

Line 4 above Eq. (14): "whose boundary is completely fixed."

Line 4 from bottom of page: "point to point of the boundary,"

P. 217, Column 3. Line 8: Add title, "Inherent Shell Strength"

Line 11: "structures comes again"



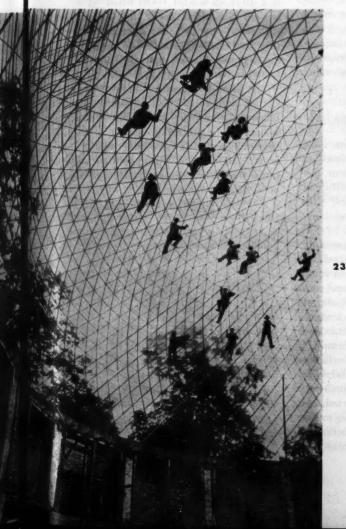




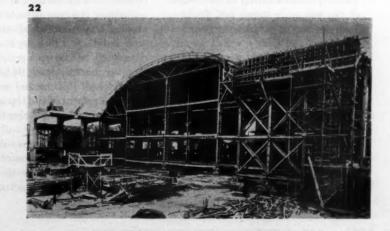


17. Platform and shell roof, which cantilever out about 50 ft, utilize prestressing in this demonstration structure for a German Fair (1951); Dyckerhoff & Widmann, Structural Engineers. 18. Placing section of "ferro-concrete," a system patented by Nervi in which corrugated elements are precast, section of them. 19. Roof of Tramway and Bus Depot, Turin, Italy, designed by Nervi and built by means of precast triangular elements of "ferro-concrete." 20. "Airform" balloon used for building concrete shell house designed by Eliot Noyes; pneumatically applied concrete is sprayed over mesh. 21. Beginning of formwork for M.I.T. auditorium by Eero Saarinen; Ammann & Whitney, Structural Engineers; George A. Fuller Co., Builders. 22. Formwork for Onondaga County War Memorial, Syracuse, N. Y.; Edgarton & Edgarton, Architects; Ammann & Whitney, Structural Engineers. 23. Dyckerhoff & Widmann method in Germany has reinforcement erected without scaffolding; concrete is then poured against small movable forms.







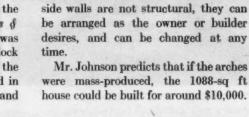


BOOMERANG ARCHES Support Rafterless House Enclosed in 48 Hours

"Boomerang" arches have been used by Philip C. Johnson, London, Ontario, architect, to support a rafterless house, hollow up to the roof, with no loadbearing walls inside. As reported in the September issue of Canadian Homes & Gardens, the London Trend House was enclosed in about 48 hr. Seven hemlock "boomerang" arches were bolted to the concrete slab foundation and braced in position, then the roof planked over and

the ends and wall openings covered with prefabricated wood panels. The house can be easily extended, and any interior materials can be used. Since the inside walls are not structural, they can be arranged as the owner or builder desires, and can be changed at any

Mr. Johnson predicts that if the arches were mass-produced, the 1088-sq ft







SHORT-SPAN CONCRETE SLABS Help Reduce Floor Dead Load

Short-span concrete slab construction has been reported directly responsible for saving approximately 30 per cent of floor dead load in Denver, Colorado's new Mile High Center, thus reducing structural steel and foundation requirements. A cost saving was realized not only from the use of air-entrained lightweight aggregate in thin slabs, but also from the reduction on reinforcement steel area made possible by using welded wire fabric.

Severud-Elstad-Krueger, consulting engineers, considered five factors in selecting short span floor construction as the most economical and most flexible in terms of the ease with which alterations can be made:

- 1. There is a direct saving in the weight of the beams, columns and foundations needed to support the lessened dead load.
- 2. A further saving of approximately 10 per cent is realized in floor steel because the floors are designed as composite beams.
- 3. Short span concrete construction adds considerably to the rigidity of the completed structure.
- 4. The speed and ease of applying welded wire fabric helps to maintain the sequence of construction opera-

- tions so that placing the steel, erecting the forms, unrolling the fabric and pouring the concrete proceeds from floor to floor without a break.
- 5. The completed floor slab is fireproof, eliminating the need for fireproofing hung ceilings.

ATOMIC BLASTS and Buildings

A Simple Method for Evaluating Blast Effects on Buildings. Dept. of Propulsion and Structural Research, Armour Research Foundation of Illinois Institute of Technology (Technology Center, Chicago 16, Ill.) Revised Edition, July 1954. 39 pp, illus.

Structural engineers and designers are offered in this booklet a method for estimating the approximate effect of an atomic blast on one-story steel and concrete buildings, which are closed, almost completely closed or open; and which have specific length-width-height ratios. By means of this method a measure of the displacement of the top of the building is obtained by analyzing the behavior of a model which is elastically similar to the building and which is subjected to a similar force. The motion of this model is assumed to indicate the motion of the building under the actual blast.

TALLEST SKYSCRAPER Oklahoma's TV Tower Will Rise to 1572 Feet

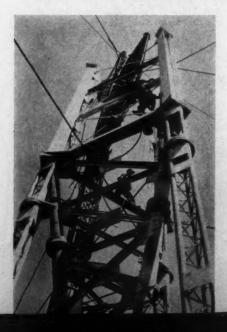
The world's highest structure, a TV tower for Station KWTV at Oklahoma City, Okla., will rise to a height of 1572 ft, including two antennas, topping the Empire State Building by 100 ft.

The tower is triangular in section, 12 ft on a side, tapering at the base to rest on circular steel slabs supported by a huge porcelain insulator capable of withstanding a crushing load of 5600 tons. The structure is guyed at the 290-, 650-, 1040- and 1340-ft levels by three pairs of prestressed galvanized bridge strand cables, making 24 guys in all.

The 675 tons of steel making up the detail elements were shop-welded and shipped to the site for field erection. Close to 11,000 lb of an iron powder electrode were used in welding flanges, platforms and wing plates to the leg sections. At the site, two legs and bracing of each section were bolted together on the ground and then hoisted into position by an "electric gin pole," which, as pictured in the foreground, is a 10-ft all-welded boom fitted with an electric winch inside its latticed structure. Once the two legs were in place and the flanges bolted, the remaining leg was hoisted and the bracing bolted to its wing plates.

The Ideco Division of Dresser-Stacey Co., Columbus, Ohio, designed and fabricated the tower. Every precaution was taken to protect it against wind, lightning and other electrical interference. "Line of sight" distance from the top of the tower to the horizon is figured at 60 miles in all directions.

(Continued on page 238)



A CHECK LIST FOR HOME WORKSHOPS

by Walter E. Schutz

With people taking more time for recreation, the home workshop is becoming an important element in a good many new houses. It is also taking on new forms. Once used mostly for woodworking, the home shop now may be designed especially for one or several of a variety of activities: plastics, ceramics, art metal, model building, woodworking, cabinet making, and metalworking. On the following two pages are briefly covered some of the points that should be considered in laying out, equipping and providing services for the shops mentioned. Also some individual shop specifications are given. The Time-Saver Standards on pp. 233 and 235 show typical plans, and a table on p. 231 gives dimensions of 35 pieces of equipment together with the working space required for each.

Space and Facilities Requirements

The space and facilities for the home workshop are dependent on three basic factors:

- 1. The type of hobby,
- 2. The extent to which the owner participates in the hobby, and
- 3. The limiting mechanical features.
- 1. Type of Hobby. Leathercraft, painting, drawing, whittling or bookbinding require only a small space, perhaps 8 by 10 ft, and almost no special facilities except heating and a few electrical outlets. This type of shop can be located in almost any part of the house.

However, woodworking and metalworking on a large scale require a shop about 14 ft wide and 40 ft long to accommodate all the machines and equipment necessary.

2. The Extent of Interest. This is another limiting, or determining, factor. If the owner will spend only a small amount of time on the hobby, then it is reasonable to assume that he will never attempt big projects and that only a small space is necessary. However, if he spends three or four nights a week in the shop, he will want and need more room.

3. Mechanical Features. The type of hobby determines what other facilities must be provided. These are listed with each type of shop in the following Time-Saver Standards. They include such things as: water supply and drains, gas service, electrical outlets, adequate lighting, chimney flues, sound deadening, ventilation, moisture control, dust control and others.

All of these are controlling and limiting factors and must be definitely established before planning starts.

Location of Machines and Equipment

Certain basic requirements must be observed in placing the machines and equipment. These are almost self-evident, but the check list on page 231 should be followed to eliminate any conflict. As an example: the woodworking circular saw, jointer and planer must always be placed so that a long board or piece of stock can be passed through the machine. This means that these tools must be located in the center of the room with plenty of space in front and in back.

A band saw should have more room to the right than on the left. The drill press, lathe and grinder can be set against the wall.

Storage

In all shops be sure to provide ample storage space. It is easier to work in a shop with plenty of storage, and also easier to keep clean and in order. This storage can take the form of open shelves, 10 or 12 in. wide, extending to the ceiling, supported every 3 ft and open in front and back. The storage also can be cabinets, 33 in. high, built like counters with shelves covered by sliding doors. These cabinets can be fitted with drawers. Open shelves or shelves with sliding doors above these cabinets are excellent.

Provide smaller shelves also — shelves 4 and 6 in. wide to take small glass jars of nails, screws and small hardware items.

The tool storage panels can be made of $\frac{3}{8}$ -in. or $\frac{1}{2}$ -in. plywood, with the tools resting on $\frac{1}{4}$ -in. wood dowel pegs, set at a very slight angle. A simple way to provide a very flexible tool board is to use perforated hardboard which is supplied with heavy wire fastener brackets that will take all hand tools. The arrangement of the brackets can be changed as new tools are added.

If these storage facilities are not built in at the start, space should be left for them so that they can be installed later.

Mechanical Facilities

Electrical Outlets. All electrical work must be in accordance with the National Electrical Code and all local and state codes. There should be separate circuits for the power tools and another circuit for the lights. (If a fuse on the power circuit blows, the lights will remain on, thus avoiding accidents.) If a number of tools are in the shop, and it is possible that two or more will be operated at the same time, then have separate circuits for them. Overload protection in the form of a quick-lag circuit breaker is excellent. A 15-amp circuit should have No. 14 wire, a 20-amp circuit, No. 12 wire. Since only fractional horsepower motors are used, this type of wiring is sufficient. A 220-v circuit is

A CHECK LIST FOR HOME WORKSHOPS

never used for any of the machines, yet it may be needed for heat-treating or for some special oven. See your local code.

Lighting. Have general illumination as well as lights for each of the machines, individually controlled. Have several outlets in both the power and lighting circuits.

Ventilation. It is good practice to ventilate the shop to bring in fresh air and force out any bothersome or dangerous paint or stain odors. This is a safety precaution also.

Dust Control. Woodworking, especially sanding, produces fine dust that is charged electrostatically, making it adhere to anything it comes near. Provide dust collectors on such machines as sanders, lathe, saw and other chipproducing machines. These can be individually operated dust collectors of the vacuum cleaner type.

Flues and Chimneys. For heat-treating and for forge work it is necessary to have a flue for taking off gases and fumes. In some instances an exhaust fan connected to the vent or flue will help draw off the gases.

Individual Shop Specifications

Later sheets in this series will show typical shops for several different hobbies. The arrangements are intended to be ideal for the area provided and the tools and equipment included.

Woodworking Shop. Usually considered as a general shop for all kinds of woodworking operations, from the building of large pieces of fine furniture and general carpentry to small wood novelties. A long, narrow room is best in order to have sufficient room for handling long stock through the circular saw and jointer.

A dust-tight finishing room with a vent to the outside is preferred. Provide plenty of storage space, shelves and cabinets; also include overhead lumber rack that can be made of 1-in. galvanized pipe, suspended from the ceiling joists. Make provision for dust collection. Have separate power and lighting circuits with plenty of outlets.

Cabinet Shop. Used more for making fine furniture and cabinets such as found in kitchens and "built-ins." Here more assembly space should be provided, yet there should be enough room for handling long stock. In all woodworking shops, if possible, have the door in line with the saw-jointer so that stock may be passed through door for extra room. More lumber storage space is needed than general woodworking. Install cut-off radial arm in lumber rack for simple cutting of long stock. Need same electrical facilities as general shop.

Machine Shop. Used for making precision items such as power tools, telescopes and other items. Should have heat-treating furnace for hardening processes, connected with flue. This shop may be long or square. Best to have cutters and other precision attachments in dust-proof drawers or cases. Provide separate lighting and power circuits.

Art Metal Shop. Used mainly for wrought iron work and work in copper and other soft metals. More of an art shop than a precision shop; therefore do not need the heavy metal working machines. Should have a forge with flue outlet for heating iron. Since pounding is done in this shop, some noise deadening should be provided. Have separate electrical circuits for the machines and the lighting, and if the welder is used extensively, then have a separate circuit for it.

Combination Shop. For both metal and woodworking; combines all of the features described above. Takes maximum space, at least 14 by 40 ft, to accommodate all machines and equipment. Not too many shops of this kind—they are not particularly practical. Cost of equipping shop is very high.

Plastics Shop. Most of the items made in this shop are small, so less room is required. The only tools needed are a saw, such as a band or scroll saw for cutting, and a combination sander-buffergrinder. These may be on the same circuit as the lights since little power is needed to form the plastic. It is best though, to have separate circuits. Have plenty of storage space in shelves and cabinets. Heating oven, electrically operated, does not need vent to flue.

The Model Shop. Little space is needed. A small scroll saw powered by the same motor that runs a combination sander-buffer-grinder and drill are all the power tools required. This can be augmented as required. Have enough storage space. One electrical circuit is sufficient, but have 4 to 5 outlets for hand tools.

This shop can serve also as a home repair center. All repair parts, faucet washers, nails, screws, hand tools, extension cords and miscellaneous items can be kept here. Have plenty of shelves.

Craft Shops. There are many kinds of these shops and the requirements are so varied that it is impossible to give any specific data. These shops or areas are used for such creative hobbies as leathercraft, bookbinding, painting, drawing, textile painting, block printing, whittling and dozens of others They can be treated as a group. The space need not be large and about the only requirements are adequate light and heat, including a warm floor, since usually most of these hobbies are done while seated. Sometimes these areas can be set aside as a separate room, such as a bedroom, den or activity room.

Specialized Hobbies. These hobbies do not fall into any one group. They are: photography, model railroading (needs extended space), ceramics and weaving (needs room for the looms and the storage of materials). Each hobby is specialized as to requirements and facilities. They can take a minimum to vast areas if desired.

Materials | Equipment | Furnishings | Services

NEW OFFICE EQUIPMENT FOR ARCHITECTS AND ENGINEERS







PORTABLE DRAFTING SYSTEM

· A portable drafting system with a drawing capacity of 22 by 34 in. will fit into a standard desk drawer and can be transferred to a carrying case for traveling. The Desk-Topper, which has all the features of full-size drafting machines, consists of a folding board equipped with folding legs and rubber feet, a box for instruments, a tracing paper dispenser and a 9-in. and a 15-in. enginedivided aluminum alloy scale. By the use of an accessory C clamp, the machine can be mounted on larger drawing boards or on a template in the shop. The vertically adjustable mounting permits direct layout work on sketch pads, plywood, sheet metal or any other material up to 3/4 in. thick. Five scale styles make the Desk-Topper practical for many types of work. Universal Drafting Machine Corp., 7960 Lorain Ave., Cleveland 2, Ohio.

ADJUSTABLE TRIANGLE

· A fluorescent adjustable triangle is precision-designed of acrylic fluorescent plastic, which has an orange tint that produces a self-illuminating orange light from all edges. Contrasting die-sunk graduations are in black. Alvin & Co., Windsor, Conn.

BLUEPRINT PENCIL

· A blueprint pencil specifically designed for checking and marking on all blue or white prints and coarse tooth papers gives color markings which are resistant to oil, dirt and grime found in the shop and are unaffected by sunlight and moisture. It can be sharpened to a fine point and will not powder or smudge. An 8-color Draftsmen's Pack Assortment includes a special obliterating blue pencil for eliminating white marks on blueprints. American Lead Pencil Co., Hoboken, N. J.

BLUEPRINT RACK WITH INDEX

· A blueprint rack which can hold from 12 to 18 sets of drawings, with an index which shows the location of each set, features a clamp which eliminates the need to punch holes in each set of prints and holds any thickness of set securely. The clamp is tightened or opened by a thumbscrew adjustment and permits easy insertion or removal of prints or sets of prints. Any sheet in a set can be replaced without removing other sheets. The Glider rack can be taken apart and reassembled, and can be enlarged by adding an extension unit to the basic unit. Momar Industries, 4323 West 32nd St., Chicago 23, Ill.



NEW COPYING MACHINES

· An office-size whiteprinter, the highvolume-production, ammonia-dry copymaster features a specially designed extra-width capacity for cut sheets or roll stock of 20 in. plus. According to the manufacturer, the machine can produce a thousand or more letters or legal size copies per hour. Electronic drive provides instant and continuously variable speed change; full stop and reversal control provides for emergency return of originals. Speed dial

control automatically changes temperature in the evaporating chamber. Peck and Harvey Sales Corp., Chicago 45, Ill.

· An automatic photocopying machine which produces dry black-and-white photocopies within 30 sec is available in two models - the Cormac Compact and the Cormac Senior - and is also equipped with a paper dispenser, shown at the right, which automatically ejects negative sheets and has compartments for positive sheets. The lightweight

machines come in plastic cases. Cormac Industries, Inc., 80 Fifth Ave., New York 11, N. Y.

• A fully automatic whiteprinting machine features an automatic tracing separator. Known as the Pease Challenger, the "one-step" machine is reportedly fast in production, with printer and developer synchronized to a maximum of 40 rpm. The C. F. Pease Co., 3906 N. Rockwell St., Chicago 18, Ill.

(Continued on page 250)







NEW HEATING COOLING SYSTEM LITERATURE

Boilers
Heating
Air Conditioning
Blowers
Controls
Piping

BOILERS

- Photos, drawings and specifications for both flush and enclosing jacket models of the 770 boiler-burner unit with a new higher S.B.I. rating are included in a 6-page catalog (770-10-1) published by Fitzgibbons Boiler Co., Inc., 101 Park Ave., New York 17, N. Y.*
- A new 8-page Testing and Rating Code for Boiler-Burner Units developed by the Boiler Output Committee is available from the Heating, Piping and Air Conditioning Contractors National Association, Suite 1843, 30 Rockefeller Plaza, New York 20, N. Y.
- A Report to Those Concerned with the Specification, Selection, Sale of Steel Firetube Boilers gives information on the Kewanee Reserve Plus Rating Plan for steel boilers. 8 pp, illus. Kewanee-Ross Corp., Kewanee, Ill.*
- Have You Checked Your Steam Costs Lately? is a 16-page illustrated presentation showing typical boiler plant problems and automatic boiler installations. Orr & Semblower, Inc., Morgantown Rd., Reading, Pa.
- The recently announced CB50-80 line of small boilers is described in Bulletin AD-135. 4 pp, illus. Cleaver-Brooks Co., 326 E. Keefe Ave., Milwaukee 12, Wis.*

METHODS OF REASONING

An approach to the scientific method of reasoning and its application to the everyday problems of industry and engineering comprise the basic subject material of this booklet. The author, P. D. Scott, experienced in training engineers and technical personnel, has explained the entire technique so that the layman as well as the technical person can quickly grasp the principles. 16 pp. \$1.00. Cleveland Engineering Society, 2136 East 19th St., Cleveland 15, Ohio.

HEATING

- Paraflo warm-air, oil- or gas-fired space heaters are described in Bulletin 552. 8 pp, illus. Dravo Corp., 1203 Dravo Bldg., Pittsburgh 22, Pa.*
- There Are Two Sides to Every Story spells out the advantages of hot-water baseboard heating. Catalog 1551 on hot water equipment is also available from C. A. Dunham Co., 400 W. Madison, Chicago, Ill.*
- Selection, ordering and installation of baseboard heating equipment are covered in a 12-page illustrated catalog issued by Shaw-Perkins Mfg. Co., 201 E. Carson St., Pittsburgh 19, Pa.*
- In Bulletin 1603 the background, application and performance characteristics of Nelex Mineral Insulated Heater Units are described. 8 pp, illus. Nelson Electric Mfg. Co., 217 No. Detroit, Tulsa, Okla.
- Ideas and Facts is a series on heating and air conditioning for industrial, domestic and commercial installations. Electrol Burner Mfg. Co., 21 Union Ave., Rutherford, N. J.

AIR CONDITIONING

- Three new bulletins are available on Chrysler Airtemp waterless air conditioning: one on home installations, another for commercial uses and a third on packaged central stations for big installations. Airtemp Div., Chrysler Corp., Dayton 1, Ohio.*
- Air conditioning and refrigeration applications for the Acme line of Flow-Cold packaged liquid chillers are described in a 4-page illustrated catalog.
 A 4-page catalog covering five models of Acme cooling towers is also issued by Acme Industries, Inc., Jackson, Mich.*
- Burnham Cooling Installation Manual is a guide to the new Hide-Away line of central air conditioners. 42 pp, illus. Burnham Corp., Irvington, N. Y.

BLOWERS

• Bulletins MD-101 and CTB-103 cover "MD" fans and turbo-pressure blowers, respectively. Chicago Blower Corp., 9867 Pacific Ave., Franklin Park, Ill.

CONTROLS

- A condensed catalog of boiler water level controls and safety devices has been prepared by McDonnell & Miller, Inc., 3500 No. Spaulding Ave., Chicago 18, Ill.*
- A 12-page illustrated catalog, Bulletin S-6, covering the Lawler Type S thermostatic temperature regulator, has been issued by Lawler Automatic Controls, Inc., Mt. Vernon, N. Y.
- A new catalog of Perfex automatic controls for heating, air conditioning and appliances (28 pp, illus.) has been published by Perfex Corp., 500 W. Oklahoma Ave., Milwaukee 7, Wis.

COMPOSITE BULLETINS

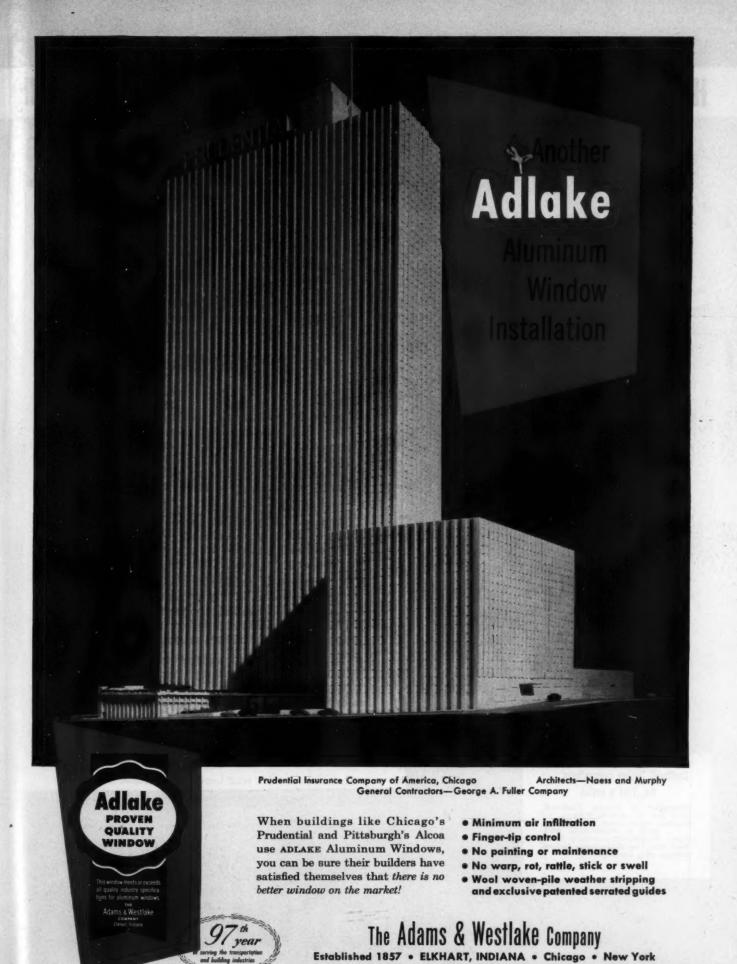
• Six new bulletins are available from Crane. Bulletin DS-352 covers packaged water chillers and Bulletin DS-361 covers reciprocating compressors for air conditioning units. Bulletin DS-362 presents information on self-contained air conditioners. Bulletin DS-372A describes Torridor high-capacity blower-type unit heaters. Bulletin DS-303 covers the new Climate Changer line for heating and cooling air. Bulletin PB-290 is a revised Product Bulletin, indexing all Trane heating, air conditioning, ventilating and heat transfer equipment. The Trane Co., La Crosse, Wis.*

PIPING

• A catalog of copper water tube, red brass and copper pipe for plumbing, heating, air conditioning and other construction and industrial purposes is offered in 30 illustrated pages by The Reading Tube Corp., Empire State Bldg., New York 1, N. Y.

(Continued on page 292)

*Other product information in Sweet's Architectural File, 1954



Also Manufacturers of ADLAKE Mercury Relays and ADLAKE Equipment for the Transportation Industry

How to Design for a Touch of Colonial America... Economically



FACTORY FINISHED TRACTURALLY

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HOME WORKSHOPS: 1

By Walter E. Schutz

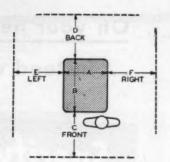
Space Requirements for Machines and Equipment

The table below shows the area of the most popular machines and the equipment used in the home workshop.

These are the minimum dimensions of machines and the minimum distances

allowable between machines and surrounding units.

There is quite a bit of variation in the size of storage shelves, tool accessory panels, bench extensions, nail and screw cabinets and similar built-in units. Usually these are built to fit the space available and special individual requirements.



Machine or Unit	Area In Inches		Spacing Requirements In Feet				
	A Width	B Depth	C Front	D Back	E Left		F Right
1. Circular Saw	48	27	12	12	6		6
2. Jointer	18	42	12	12	2		1
3. Band Saw	34	15	4	4	1		6
4. Scroll Saw	16	38	3	0	2		2
5. Woodworking Lathe	56	12	3	0	2		0
6. Drill Press	14	28	3	0	2		2
7. Comb. Belt and Disc Sander	30	20	3	2	2		3
8. Wood Shaper	21	15	4	0	4		4
9. Planer	30	16	12	12	3		1
10. Radial Arm Saw	22	25	4	0	10		10
11. Comb. Sander-Buffer-Grinder	16	16	3	3	2		2
12. 10-in. Metalworking Lathe	58	26	3	0	2		2 .
13. Tool Grinder	22	12	3	0	1		1
14. Milling Machine	34	26	3	0	3		3
15. Metal Shaper	18	36	4	0	2		2
16. Power Hack Saw	14	24	2	0	6		6
17. Arc Welder	14	28	6	0	4		4
18. Punch Press	12	16	3	0	2		2
19. Sheet Metal Brake	24	10	4	4	1		1
20. Shear	24	24	4	4	1		1
21. Slip Roll	20	12	3	3	1		1
22. Nibbler	18	24	2	0	3		3
23. Shear Clamp Head	12	18	4	0	3		3
24. Metal Cutting Band Saw	20	26	4	4	2		4
25. Heat-treating Furnace	30	30	4	0	0		0
26. Forge	36	36	4	0	0		0
27. Heating Oven for Plastics	24	18	2	0	0		0
28. Kiln	36	48	3	0	0		0
29. Potter's Wheel	24	30	3	0	2		2
30. Woodworking Bench	72	30	6	0	3		2
31. Metalworking Bench	60	28	4	0	2		2
32. Tool and Accessory Panel	60	48 high					10
33. Storage Shelves (open)	48	12	NEWS YOUR				
34. Storage Cabinets	48	18	MELVIE L				
35. Counters	48	18	33 in. high				

You wouldn't specify plumbing like this or furniture like this.

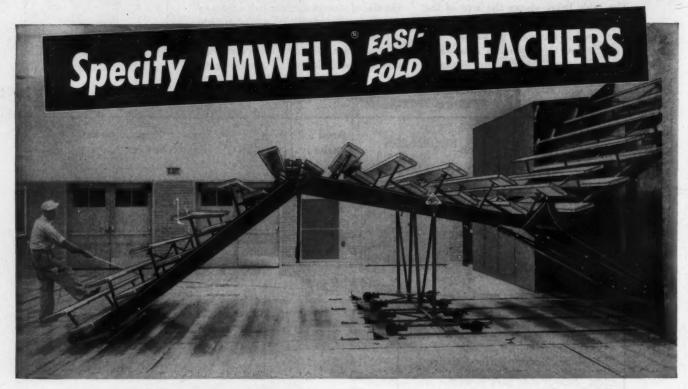




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... instead of old-fashioned bleachers like this





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REQUIRES MINIMUM SPACE

When not in use, Amweld Easi-Fold Bleachers fold flat against the wall. Occupy less floor space than any other bleacher.

SAFE—CANNOT COLLAPSE IN USE

In use, live load is transferred to floor. Special braces lock supports in place - eliminate any possibility of accidental collapse.

ONE MAN CAN OPERATE

Amweld Easi-Fold Bleachers roll out smoothly - are perfectly balanced for easy opening and closing.

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No complicated maze of supporting members. Open space underneath seats provides place to hang coats and hats during game and make "after game" cleaning easy.

ONLY 25 MOVING PARTS

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AMERICAN WELDING

AND MANUFACTURING CO. 340 DIETZ ROAD . WARREN, OHIO

TIME-SAVER STANDARDS

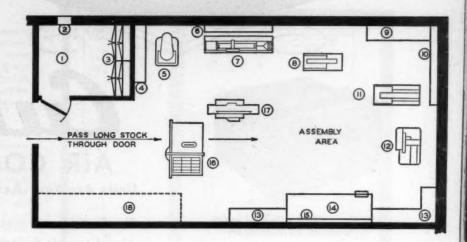
HOME WORKSHOPS: 2

By Walter E. Schutz

WOODWORKING SHOP

Circular saw and jointer must be in center with adequate room front and rear, since the entire length of board must be passed over them; door opening gives extra space. Finishing room (1) has swinging door, normally closed to keep dust out. Vent finishing room with exhaust fan.

1. Finishing room 2. Exhaust fan 3. Cabinets for finishing materials 4. Panel for drill press accessories 5. High speed drill press 6. Panel for lathe accessories 7. Woodworking lathe, 12-in. 8. Band saw, 12-in. 9. Storage cupboard and shelves 10. Panel for scroll saw accessories 11. Scroll saw, 24-in. 12. Combination disc and belt sander 13. Storage shelves and drawers 14. Bench with woodworking vise 15. Panel for hand tools 16. Tilling arbor circular saw, 10-in. 17. Jointer, 6-in. 18. Overhead lumber storage rack



PLASTICS SHOP

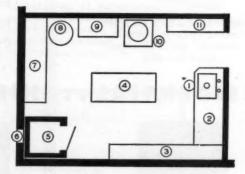
This same layout, less oven, is adaptable to a small jewelry shop, or even a small woodworking shop

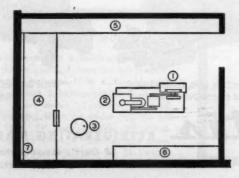
Storage shelves with drawers 2. Bench with woodworking vise 3. Panel for hand tools 4. Electric oven for plastics molding 5. Storage cabinet with shelves below for sheet plastics 6. Storage shelves to ceiling for small items 7. Scroll saw, 16-in. 8. Panel for scroll saw accessories 9. Combination disc sander-buffergrinder-drill 10. Panel for storing combination accessories.

CERAMICS SHOP

If kiln is gas-fired a flue must be provided. Water supply and drain are necessary. Only "machine" is a potter's wheel

Sink with hot and cold water 2. Sink counter 3. Storage shelves to ceiling 4. Table 5. Kiln 6. Flue (if kiln is gas-fired) 7. Storage shelves to ceiling 8. Slip barrel 9. Wedging table 10. Potter's wheel 11. Storage shelves and drawers





MODEL-BUILDING SHOP

This identical layout can be used also as a home repair center. As a model-building shop it has plenty of storage shelves and all the machines usually used.

Combination sander-grinder-buffer-drill mounted on stand 2. Scroll saw, 16-in. (both combination unit and scroll saw are run from same motor, as shown) 3. Stool 4. Bench with woodworking vise 5. Storage shelves to ceiling, some drawers for small items 6. Storage shelves to ceiling 7. Panel for hand tools

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TIME-SAVER STANDARDS

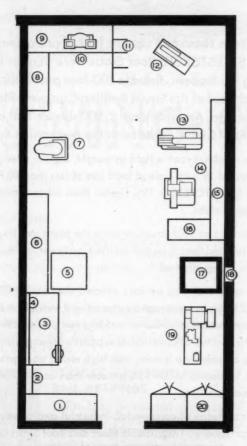
HOME WORKSHOPS: 3

By Walter E. Schutz

CABINET SHOP

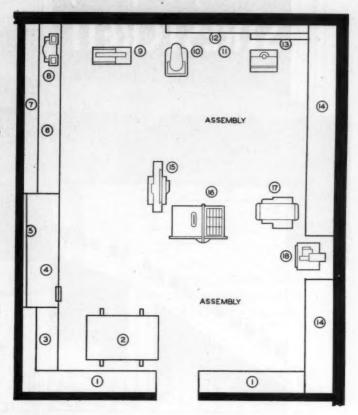
Cabinets take considerable space for gluing and assembly, so more shop area and benches, (4) and (6), should be provided than for wood working. Lumber racks (14) should easily take 12-in. boards. Circular saw (16) jointer (15) and planer (17) must have plenty of room for passing through full-length stock. Cut-off saw (18) is built into lumber rack for simple handling of stock. Provide bench-high counters on both sides to support boards

1. Storage shelves, to ceiling 2. Table-high layout and gluing board on movable horses. 3. Hardware storage shelves, drawers below bench for nails, screws 4. Bench with woodworking vise 5. Panel for hand tools 6. Bench-high storage cabinet, some drawers 7. Storage shelves to ceiling 8. Bench tool grinder 9. Band say, 12-in. 10. Floor-type, high-speed drill press, 15-in. 11. Spindle shaper 12. Panel for drill press accessories 13. Panel and drawers for shaper accessories 14. Lumber racks 15. Jointer, 6-in. 16. Tilting arbor circular saw, 10-in. 17. Planer, 12-in. 18. Radial arm saw, 10-in.



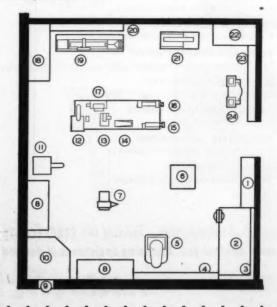
ART METAL SHOP FOR WROUGHT IRON

1. Storage shelves for small parts 2. Bench with metalworking vise 3. Panel for hand tools 4. Panel for drill press accessories 5. Slow-speed drill press, 15-in. 6. Movable table on casters 7. Anvil on block 8. Storage cabinet 9. Flue for forge 10. Forge 11. Arc welder 12. Nibbler 13. Punch press 14. Shear clamping head 15. Shear 16. Slip roll 17. Metal brake, 12-in. 18. Storage shelves 19. Woodworking lathe for metal spinning 20. Panel for lathe accessories 21. Metal-cutting band saw, 20-in. 22, 23. Storage shelves 24. Tool grinder



MACHINE SHOP

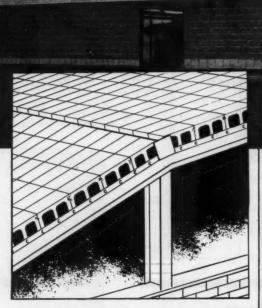
1. Storage cabinet with shelves 2. Small parts storage, drawers 3. Bench with metalworking vise 4. Panel for hand tools 5. Movable table on casters 6. Storage shelves 7. Slow speed drill press, 15-in. 8. Storage cabinet 9. Benchhigh drawer cabinet 10. Tool grinder 11. Vertical "standup" rack for storing metal 12. Metal-cutting band saw, 20-in. 13. Metal shaper 14. Milling machine 15. Storage cabinet, shelves, drawers 16. Bench-high counter 17. Heattreating furnace 18. Flue 19. Metalworking lathe, 29-in. 20. Storage cabinet



CLIENTS PROFIT when you specify STRESTCRETE

Squirt Bottling Company Plant at 53rd and Millard Chicago, Illinois

Architect; WILLIAM ALDERMAN Engineer: WOLFE SAGALOVITCH



STRESTCRETE LICENSEES

- ADAMS CONCRETE PRODUCTS CO.
 1418 Ecorse Road, Ypsilanti, Michigan
- ANCHOR CONCRETE PRODUCTS, INC.
 Wabash Ave. at 2450 William St., Buffalo 6, N. Y.
- ATLAS BUILDING PRODUCTS CO.
 P. O. Box 601, El Paso, Texas
- BASALT ROCK CO., INC.

 8th and River Streets, Napa, California
- BEST BLOCK COMPANY
 E. Keefe Ave. & N. Fratney St., Milwaukee 1, Wis.
- CLEVELAND BUILDERS SUPPLY CO.
 1276 West Third Street, Cleveland 13, Ohio
- ILLINOIS BRICK COMPANY
 228 North La Salle Street, Chicago 1, Illinois
- LA BRIQUE DU NORD, LIMITEE Rouyn, Quebec, Canada
- PLASTICRETE CORPORATION
 College Highway, Hamden 14, Connecticut
- ROCKLITE PRODUCTS
 Ventura Boulevard, Ventura, California

Fifteen thousand square feet of pre-assembled 6" STRESTCRETE Roof Slabs were used in forming the modern, firesafe 100-foot parabolic steel arch roof of the Squirt Bottling Company Plant in Chicago. An additional 2,500 square feet of 10" STRESTCRETE Slabs form the mezzanine floor.

The resultant roof is light in weight, high in strength... spans of 18' with a dead load loss of less than 40 PSF... for STRESTCRETE is 19% lighter than other rectangular precast slabs.

This type of roof structure gave the plant maximum unobstructed floor area and resulted in a lower fire insurance rate being allowed.

As structural iron workers erected the arches, STREST-CRETE Slabs were rapidly placed and welded. A \$3,000 saving was effected, since welding end plates of the slabs to the arches affords lateral support without purlins. Ceiling appearance is neat, with high sound absorption and an insulation factor 15% greater than combustible construction.

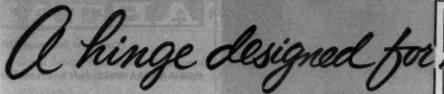
For all types of commercial, industrial and public buildings—specify STRESTCRETE Floor and Roof Slabs that can be rapidly installed by a nominal labor force. You'll save design time, speed construction and hasten occupancy.



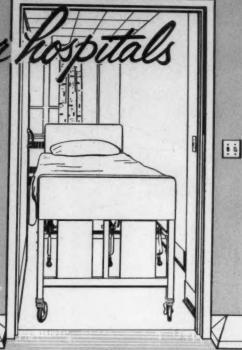
For detailed information—consult the STRESTCRETE Licensee nearest you. Planning assistance if desired



FLOOR and ROOF SLABS







This hinge swings door clear of opening—allows full use of framed space.

SWING-CLEAR HINGE

APPLICATION

In patients' rooms, operating rooms, emergency rooms... wherever traffic necessitates a completely clear opening.

CONSTRUCTION

Extra heavy, cold rolled wrought steel. Standard finishes, or bonderized and prime coated. Four *Full Jeweled* ball bearings on each hinge.



STANLEY FULL JEWELED®

Door load is carried on fully enclosed, permanently lubricated ball bearings. These radial thrust bearings eliminate lateral as well as vertical wear. HALF MORTISE SWING-CLEAR HINGE





FULL SURFACE SWING-CLEAR HINGE





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Write for your free copy of "Stanley Hospital Hardware" H-75. Complete with illustrations and technical data.

STANLEY

Hardware

A Division of The Stanley Works . New Britain, Conf

HARDWARE . TOOLS . ELECTRIC TOOLS . STEEL . STEEL STRAPPING

RUSSWIN RUSSWIN "400" Door Closer **RUSSWIN Surface Door Closer** RUSSWIN Triple-Grip Door Holders **RUSSWIN Exit Bolts** RUSSWIN Adjustable Anti-Friction Pivot Hinges

A ROUNDUP

(Continued from page 236)

MODULAR DRAWINGS Aids to Their Use

Building Better from Modular Drawings,
 Housing and Home Finance Agency.
 U. S. Government Printing Office,
 Washington 25, D. C. 24 pp, illus. 20¢

"The modular method is a way of making buildings go together more easily" starts this picture primer. It goes on to show how the module as a basic unit of measure is useful to the manufacturer of building materials, the architect and the builder, and saves both time and money. Typical drawings are included to show how the architect's plans are simplified by the modular method.

• A drafting aid for architects who use the modular method of dimensioning consists of a thin translucent sheet, called a Stanpat, which is applied directly to tracings to indicate that the drawings are modular, and to demonstrate dimensioning principles for plans and details, thus facilitating their interpretation. The sheets are made by the Stanpat Engineering Co. of Whitestone, N. Y.

TESTING BUILDING CONSTRUCTION Is Discussed at 57th ASTM Meeting

A symposium on Methods of Testing Building Construction was a feature of the 57th Annual Meeting of the American Society for Testing Materials in Chicago and covered such subjects as masonry walls, roof trusses, roof diaphragms and fire tests.

In his opening paper, entitled "Why Test Building Constructions," H. L. Whittemore, formerly of National Bureau of Standards, stressed the work of one of the committees which was responsible for the publication of Standard Methods of Conducting Strength Tests of Panels for Building Construction.

Data were presented by R. F. Luxford and O. C. Heyer in "Glued and Nailed Trusses for House Construction," in an effort to answer the question as to whether glued trusses would give better service than nailed trusses with some saving in material as well.

"Lateral Tests on Full-scale Lumberand Plywood-sheathed Roof Diaphragms" by J. R. Stillinger, of the Oregon Forest Products Laboratory, summarized part of an overall objective of several organizations to develop ra-

A ROUNDUP

tional design data which can be used by structural engineers in the design of buildings.

The difference between fire and flame tests was brought out by A. J. Steiner, Underwriters' Laboratories Inc., in a paper entitled "Fire Tests of Building Structures and Materials and Their Utilization in Building Code Requirements."

Results of tests on the transverse resistance of 6-in. brick walls were given in "Transverse Strength Tests of Masonry Walls" by C. B. Monk, Jr., of the Structural Clay Products Research Foundation. Lyman W. Wood, Forest Products Laboratory, discussed "Structural Performance Requirements in Housing Codes."

In a session on Concrete and Cementious Materials, papers were presented on "Masonry Cracking and Damage Caused by Moisture Expansion of Structural Clay Tile" and "Some Observations on Volume Change in Mortars and Concretes."

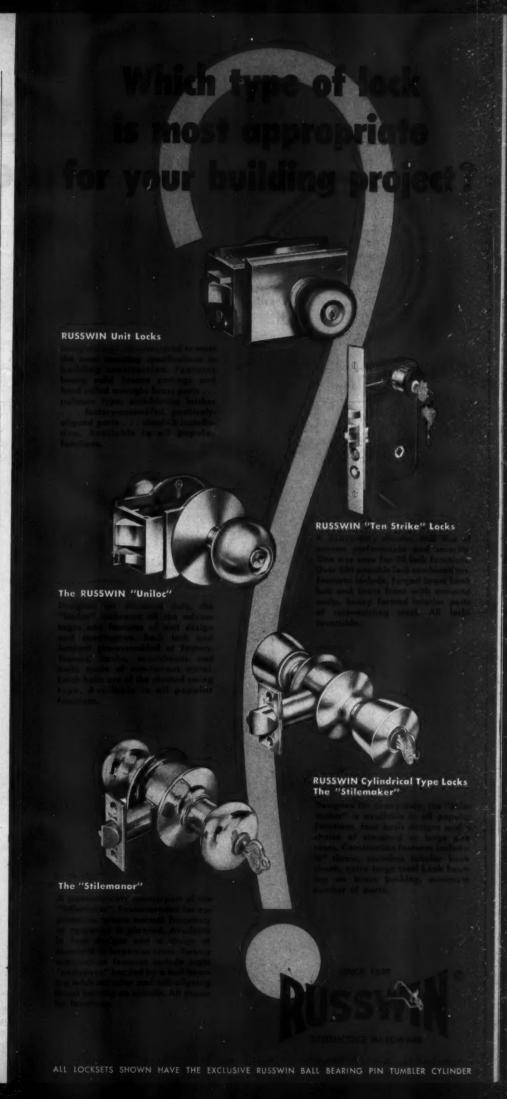
HARDWOOD FLOORING Expansion Can Be Controlled by Proper Methods

The tendency of hardwood flooring to shrink and swell because of constantly changing atmospheric conditions can be reduced and controlled by proper installation methods, according to results of research by the Maple Flooring Manufacturers Association. Published in a report entitled "Controlling Expansion of Hard Maple Floors," the research results are interpreted to show how to control expansion of hard maple floors, with emphasis placed on the importance of proper nailing. A map of the United States shows expected changes in average moisture content of wood used indoors between January and July. Copies of the 8-page report are available from the MFMA, Suite 548, Pure Oil Bldg., Chicago 1, Ill.

RADIOACTIVITY in Rubber and Plastics

Representatives of the plastics and rubber industries learned all about applications of radioactivity to their operations during a three-day symposium in Boston last month. Tracerlab Inc., sponsor of the symposium, now offers a leak-locating service, on a consulting basis, which uses radioactive iodine-131 and Geiger counters (see News note, page 210, Sept. AR). Fee is about \$50 or \$75.

(Continued on page 242)



NOW! Full unit control in ... with Trane UniTrane

Each tenant dials his own climate with this air conditioning system. This is UniTrane! And UniTrane means full unit control in multi-room air conditioning. It's the system that offers all the desirable features of a central system . . . plus individually-controlled room units that cool or heat, dehumidify, ventilate, filter and circulate air for personalized climate control.

UniTrane meets widely varied demands—from large office buildings, hospitals, hotels and commercial buildings down to small apartments and motels. Because, with UniTrane, each tenant sets the temperature of his room just as he wants it, without affecting the temperature or "climate" of any other room. Tenants prefer it.

Management agrees UniTrane offers more. This unique combination of tenant advantages costs less to install, far less to operate. The same piping circuit is used for both heating and cooling. Individual room units can be shut off in unoccupied rooms without affecting operation of any of the other units. Operating load can be matched directly to

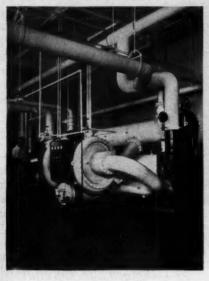
fluctuating temperature requirements for lowest possible operating costs.

Architects especially like the savings in valuable floor space, the design freedom. Units are available in all sizes and types—free-standing, recessed, semi-recessed, ceiling—for either exposed or concealed installation.

Discover for yourself just how easy it is to offer full unit control in multi-room air conditioning—with central system economy! Contact your nearest Trane Sales Office or write Trane, La Crosse, Wisconsin, for Bulletin DS-420B.



multi-room air conditioning Units



in m. es ed, ed is m

Trane CenTreVec supplies chilled water for UniTrane and Trane Climate Changer units in large systems, Starts, stops, modulates automatically, with power consumption in almost direct proportion to load. Eight models, 45 to 400 tons.



Trane Cold Generator for smaller installations using UniTrane units or TRANE Climate Changers, or both. Delivers chilled water from one compact package. Engineered, built, tested and refrigerant-charged at the TRANE factory. 10 to 100 tons.



Trane Multi-Zone Climate Changers are air handling units which can heat, cool, humidify, dehumidify, ventilate and filter air (singly or in combination) for as many as six different zones at once. 28 models, 450 to 23,400 cfm.



In six of New York's newest skyscropers TRANE Custom-Air systems are installed. The Custom-Air system utilizes UniTrane room units combined with a central source of ventilation air to give complete air conditioning comfort plus individual tenant control of room temperature. Installations include 99 Park Ave.; 579-589 Fifth Ave.; 7 Park Ave.; 261 Madison Ave.; 720 Fifth Ave.; 460 Park Ave.

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Specify TRANE UniTrane Units

for personalized climate control

MANUFACTURING ENGINEERS OF AIR CONDITIONING, HEATING, VENTILATION AND HEAT TRANSFER EQUIPMENT
The Trane Company, La Crosse, Wis. • East. Mfg. Div., Scranton, Penn. • Trane Co. of Canada, Ltd., Toronto
90 U.S. and 15 Canadian Offices



"We reduce erection costs and install MOBILWALLS faster when we anchor with Ramset"

That's the experience of Virginia Metal Products, Inc., of Orange, Virginia, one of the leading producers of movable steel partitions. Frequently up against a tight time schedule, they find it far quicker and less costly to use RAMSET SYSTEM than conventional methods. Just set steel stude into concrete floors, walls and ceilings, with a split-second RAMSET JOBMASTER. Slip anchors over the stude, set the partition section into place and tighten with nuts. The job is done, in less than 1 minute per anchor. Erection is finished sooner so that space can be occupied, and cost savings are passed on to the owner.

These same advantages of RAMSET speed and economy can be gained for almost any work involving fastening into steel or concrete, for new buildings or modernization. Three RAMSET JOBMASTER tools are available for light, medium or heavy work, with 65 Tru-Set Fasteners in six different types to match the specific job requirements.

If you'd like to know more about how RAMSET saves time, money, and trouble, for fastening into steel or concrete, call your local dealer or ask for illustrated manual Modern Fastening Methods.

Ramset Fasteners, INC. Olin Industries, Inc.
12147 BEREA ROAD • CLEVELAND 11, OHIO

FIRST IN POWDER ACTUATED FASTENING





(Continued from page 239)

PNEUMATIC TUBES Large Automatic
System Is Expandable, Changeable

A pneumatic tube system with an "electromechanical brain" will expedite the flow of papers, small drugs, prescriptions, case history records and laboratory specimens to all parts of the 10-story Milwaukee County Hospital in Wisconsin. The dial-operated system, both automatic and selective, will permit the sender to forward his message or article to any of 59 initially planned sending and receiving stations, which will be installed in patient areas as well as service departments.

The new system, claimed by International Standard Trading Corp. to be the largest fully automatic 4-in.-tubing system in the world, will be installed so that new stations can be added and existing stations changed with a minimum of effort. Should a minor failure occur in any part of the system, the "brain," a relay panel which determines the course of the tubes and provides the appropriate space interval between traveling tubes, will flash alarm signals to a supervisor or other attendant.

STORAGE BATTERIES to Last 17 Years

Storage batteries with a life of more than 17 years have been announced by The Electric Storage Battery Company as the result of years of research on improved battery grid alloys. The long-life batteries will have hundreds of industrial applications, including emergency lighting, switchgear control, fire alarm systems, telephone stand-by, railway signal control and other stationary power applications requiring stand-by current.

INDUSTRIAL TELEVISION For Conveyors

Industrial television was cited as one of the major developments in the conveyor industry by B. G. Schneider, assistant chief engineer, Chain Belt Co., at the 50th Anniversary Meeting of the Milwaukee Section of the ASME. "By industrial television, control through an operator's observation is greatly extended," he said, "and moreover it can be extended into areas of extreme heat, cold, chemical fumes, or other conditions which normally exclude the presence of an observer."

(Continued on page 246)



a jewel of sight-saving diffusion power

Thousands of these cubes make up each GrateLite panel...and create a brand new kind of light.

FINE DIFFUSION...the cubicles appear to blend into one solid, luminous mass. Its surface is 30% vertical members!

HIGH EFFICIENCY...translucency and openness, tapered vanes, shallowness (3%")—these assure highest illumination values with low absorption factor.

LOW BRIGHTNESS ... its vanes with contrasting cubicles and "in shadow" characteristics render light of extremely low brightness without an effect of dimness.

EXCELLENT SHIELDING ... exclusive 45° x 45° shielding method (with 3%" cubes) gives greater eye protection than any other louver with larger openings.

LOW MAINTENANCE . . . GrateLite stays clean—bugs and dust drop right through. Quick, easy washing restores brand new luster every time. A two minute job!

GUTH LUMINOUS - LOUVERALL CEILINGS

AND MORE! GrateLite's closely spaced vanes make it rugged to stand severe usage. It provides efficient AIR CONDITIONING DIFFUSION... and filters out a portion of room noise.

It's all in the sight-saving cubes-and only GrateLite has them!

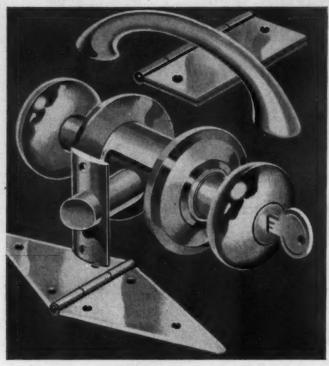
Write for free booklet "The GrateLite Story" today.

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Leaders in Lighting since 1902

*TM Reg. U. S. & Can. Pats. Pend.

Make your houses easier to sell...



Aluminum hardware adds sales appeal because of its bright, clean, modern look that will last for years and years. Rugged enough to resist the roughest wear and tear.



Aluminum louvers and ventilators add sales appeal because they maintain their handsome appearance through years of hard usage. Used outside, no red rust streaks on siding.



Aluminum insect wire screening adds sales appeal because it keeps its bright good looks indefinitely. Can never cause red rust stains on window sills or siding. Practically does away with maintenance.

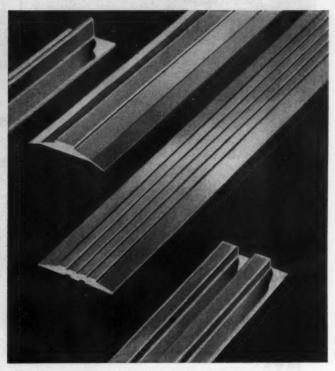


Aluminum mouldings, corners, ornamental trim add sales appeal because they give extra protection against everyday scuffing, banging, staining—while providing permanent beauty.

with ALUMINUM PRODUCTS!



Aluminum gutters and downspouts add sales appeal because they resist corrosion and never develop ugly red rust stains. They never require protective painting. Light weight, easy to install.



Aluminum weatherstripping adds sales appeal because it gives weather protection for the life of the house—can never deteriorate with rust, can never corrode. Strong and flexible for tight seal.

EVERY IMPROVEMENT you make with aluminum products provides extra sales appeal for the houses you build—because aluminum offers a combination of advantages no other material can match.

Among these advantages are light weight, strength, corrosion resistance, economy, and modern beauty.

We do not make any of the products shown here, because serving manufacturers with basic aluminum is our primary business.

Due in great part to our vast expansion, there is now a plentiful supply of building products.

We now have the capacity to produce 30% of all the primary aluminum made in this country.

Engineering assistance on any original architectural or building idea or specification is available from our qualified aluminum engineers. Or for names of building products manufacturers who will be glad to work with you, contact any Kaiser Aluminum office listed in your telephone directory.

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library problem

meet



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Library Equipment Division





(Continued from page 242)

REVIEWS Books and Handbooks

Estimating Production and Construction Costs, by Louis Dallavia. The Dallavia Co. (2110 Elmen, Houston 19, Tex.) 1954. 8½ by 11 in.; 274 pp, illus. \$15.00.

A feature of this handbook of construction costs is the 160 tables which cover general production operations of earthwork, reinforced concrete, structural steel, masonry and rough and finish carpentry. An introduction explains the "revolutionary new method of calculating construction costs for any general construction in any place at any time."

Structural Engineers' Handbook Library, by George A. Hool and W. S. Kinne, revised by R. R. Zipprodt. McGraw-Hill Book Company, Inc. (330 West 42nd St., New York 36, N. Y.) 1954. 6 vols., 3763 pp, illus. \$41.00.

This engineering library has been revised to cover every phase of structural engineering, from foundation and substructure work to the erection of a concrete building. Each section has been prepared by one of 63 noted authorities in the field. The titles of each of the six volumes indicate the worth of the library:

Foundations, Abutments and Footings. Structural Members and Connections. Stresses in Framed Structures. Steel and Timber Structures. Movable and Long-span Steel. Reinforced Concrete and Masonry Structures.

Bibliography on Prestressed Concrete. American Concrete Institute (18263 W. McNichols Rd., Detroit 19, Mich.) 1954. 87 pp. \$2.00.

The entire library on prestressed concrete — covering history, theory, methods, applications, etc., and including all works published here and abroad — is cataloged in this neatly arranged book. Starting with the first paper published in 1896, the bibliography lists subsequent works chronologically, with entries alphabetized by author within each year.

AITC Timber Construction Standards. American Institute of Timber Construction (1757 K St., N.W., Washington 6, D. C.) 1954. \$2.00.

Provides comprehensive standards covering design, fabrication and erection of engineered timber construction, and standard practices of the industry.

A ROUNDUP

SMOG A Study on Its Major Causes

The Smog Problem in Los Angeles County by Stanford Research Institute. Western Oil and Gas Association (510 West Sixth St., Los Angeles 14, Calif.) 1954. 134 pp, illus.

In Los Angeles, one of the most smogvisited areas in the world, research by Stanford Research Institute has indicated that conditions which affect smog incidence there include (1) topography, (2) the fact that substances responsible for smog are always present in the atmosphere, and (3) an abnormally large amount of ozone in the air to oxidize chemical materials.

With conditions of strong sunlight, stagnant air and temperature inversion, smog develops rapidly, most often to full density in mid-morning. Chemical materials are emitted to the atmosphere in the approximate amount of 3100 tons daily. Of 1500 tons of hydrocarbons discharged daily, 1180 tons come from automobiles, 52 tons from service stations and 224 tons from gasoline production, refining and marketing. Backyard incinerators contribute nearly 400 tons of organic material each day.

The SRI research has been concentrated on the problems of eye irritation, visibility reduction and crop damage. The report is divided into two parts: "The General Picture," which concludes with a list of questions which must be answered before a solution to the smog problem is reached; and "The Scientific Story," which presents six scientific papers on the subject.

The Semi-annual Technical Conference of the Air Pollution Control Association is being held in Los Angeles from November 4 to 6.

CLAY TILE ASA to Write Standards For Thin-setting Installation

Standard specifications for the thinsetting method of installing clay tile will be established by the American Standards Association, tile contractors were told at the Miami, Fla., convention of the Tile Contractors' Association of America. A proposed set of standards, to be used until the ASA specification is issued, has been incorporated into a Use of Materials Bulletin, issued by the FHA. The proposed standards include adhesives, preparation of wall surface, installation of wall tile, preparation of floors, and installation of floor tile.



Their house drew 10,000



What made Westfield at Natick, Mass. pay off for Campanelli Bros., Inc.?

Let Mr. Nicholas Campanelli, president, tell you in his own words.

"We expected many people at our Westfield opening . . . but nothing like *this* huge crowd that descended on us! They inspected the whole house... but spent *most* of their time *in the kitchen*.

"It was the G-E Kitchen-Laundry that held them there. Folks were amazed to learn that payments for these appliances are no more than the average monthly phone bill, when included in the regular home mortgage!

"It sold many of them right on the spot . . . and sold us for good on G. E. We're planning 600 more houses in the next two years, and we're

relying on the G-E Kitchen-Laundry to do a lot of selling for us."

It can work for you, too. You can put General Electric to work just as Campanelli Bros. have done so successfully.

Install sales-appealing General Electric Kitchen-Laundry appliances in *your* homes . . . include their price in the regular home mortgage . . . and make available to the prospect these worksaving wonders at a price he can *easily* afford!

If you're not selling all you should . . . all you want to sell . . . why not get in touch with your G-E distributor right away! General Electric Company, Appliance Park, Louisville 1, Ky.



This is the G-E Kitchen-Laundry that delighted so many househunters on opening day. Included are the G-E Refrigerator, G-E Range, G-E Dishwasher, G-E Cabinets and G-E Automatic Washer.



These are the Campanelli brothers (left to right: Nicholas, president; Joseph, treasurer; Alfred, vice-president; Michael, secretary). Within the past two years, Campanelli Bros., Inc. has completed 629 G-E equipped homes and has 406 under construction . . . all to be G-E equipped, as well. For them, G. E. pays solid dividends in faster home sales.

on opening day! will yours?



G. E. has a Kitchen-Laundry for your homes—regardless of price range!

(See your G-E distributor for answers to your kitchen problems.)



IN YOUR \$9,995 HOUSES

Include G-E Refrigerator, G-E Range, G-E Dishwasher, G-E Disposall, [®] G-E Cabinets. Add as little as \$3.26 monthly to mortgage payments.



IN YOUR \$12,500 HOUSES

Include G-E Refrigerator, G-E Range, G-E Disposall, G-E Dishwasher, G-E Automatic Washer, G-E Cabinets. Add as little as \$5.31 monthly to payments.



IN YOUR \$16,000 HOUSES

Include G-E Refrigerator, G-E Range, G-E Dishwasher, G-E Disposall, G-E Automatic Washer, G-E Dryer, G-E Cabinets. Add as little as \$6.31 monthly to payments.

HOME BUREAU

GENERAL ELECTRIC

PRODUCTS

(Continued from page 227)

SCHOOL EQUIPMENT

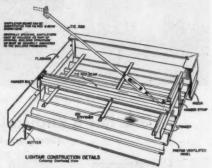
• The Moduwall Live-wall increases classroom flexibility by making possible changeable arrangements of classroom equipment. Natural finish hardwood standards are bolted to the wall, and chalkboards, tackboards, shelving, pegboards, teachers' closets, etc., are fastened to them by means of metal holders. The number and kind of wall hangings can be arranged in each classroom to meet the needs of the teacher and the class, and the heights adjusted to the size of the children. Moduwall, Inc., 175 Fifth Ave., New York 10, N. Y.





· A chair and desk combination eliminates the front legs of the chair, allowing maximum leg room for the student, and provides spacious knee room by the upward slant of the bottom of the desk. The 20- by 24-in. lifting desk top is available in either natural maple or maple-grain high-pressure plastic. The light weight of the unit permits easy moving, and the four points of contact with the floor simplify cleaning of classrooms. The Brunswick Book Box Combination comes in five graduated sizes of 21, 23, 25, 27 and 29 in. from desk top to floor. The Brunswick-Balke-Collender Co., 623 S. Wabash, Chicago, Ill.

MARQUEE



• In the LightAir Marquee each Wshaped leaf acts as a simple girder giving necessary strength to accept static loads up to 60 psf and winds in excess of 100 mph. Each leaf, at right angles to the building, also acts as a primary drainage channel directly to the gutter. The W shape of each leaf, with lips which overlap the next leaf, provides air circulation and protects against sun, rain and snow. The ventilated aluminum marquees, offered in 6-in. and 12-in. module leaves, can be cantilevered in almost any projection. Special fascia details are available permitting protected and concealed lighting behind outer fascia. The manufacturer has complete design details. Shurtleff Co., 1313 L St., Lincoln, Neb.

(Continued on page 254)



Send for further information and

installation data on the economical.

easy-to-use BURSON CLIP SYSTEM.

2441-47 SOUTH INDIANA AVENUE . CHICAGO 16, ILLINOIS VICTORY 2-5115

lower installation costs, insure greater fire safety and assure

The next time your plans call for acoustical tile or other

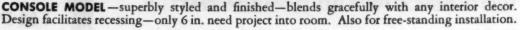
types of gypsum lath suspended ceiling construction be

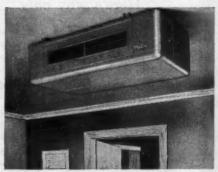
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sure you specify BURSON CLIPS.

NOW — for low-cost, year 'round air conditioning of individual rooms



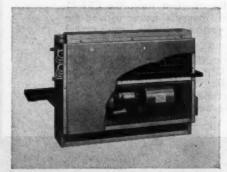




CEILING MODEL — deluxe unit for exposed installation on ceiling—saves floor space.

Here's low-cost cooling, heating, ventilating, filtering, dehumidifying and circulating of air for individual rooms. Ideal for hotels, offices, apartments, motels, hospitals and similar multi-room applications. AIRditioners* save cost of installing central duct systems in new buildings. On modernization jobs, they solve the difficult problem of providing supply and return ducts in existing walls.

Cold water from a central chiller or other source is piped to each unit for summer cooling. Heating is accomplished with hot water from a

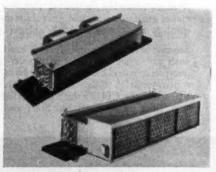


CONCEALED MODEL (front panel cutaway) permits out-of-sight installation in wall.

central heating plant. The same piping
—water supply and return, and drain
—serves each unit for both cooling
and heating. And AIRditioners are
individually controllable.

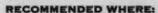
Get all the facts on the new AIRditioner from the Modine representative listed in your classified phone book. Or clip this coupon and mail it today. *Trademark

Modine Hizditioner



OVERHEAD MODELS — with or without plenum and filter for use in furred space.

	4
MODINE MFG. CO. 1510 DeKoven Ave. Racine, Wis.	
Please send me a free copy of Bulletin describing "The New Modine AlRditioner."	



- Seeing tasks demand 25 footcandles or
- Walls, cellings, machinery, etc., have good reflectance. You need super-comfortable illumination.

- Maintenance costs are important.
 Best lighting is required at reasonable cost.

THE REVOLUTIONARY NEW LIFETIME

CFI-25

WITH 25% UPWARD COMPONENT

The CFI-25 is more than a new fixture. It is the beginning of a new era of super-comfortable industrial lighting. For the first time, the CFI-25 makes available a rugged, premium quality industrial fixture with all the comfort advantages of 25% uplighting—within a practical price range!

See this sensational new development. Compare it-feature for featurewith any other industrial fixture on the market. Notice the full 8-foot, one-piece, porcelain enameled reflectors...the new "bridge-type" ribbed construction... super-comfortable shielding... the many, many features that make the CFI-25 the most modern product in its field. Available for 8 ft. Slimline, 4 ft. Rapid Start and the newly developed 8 ft. High-Output Rapid Start lamps.



20° LENGTHWISE SHIELDING. Optional louver assembly provides excellent visual comfort. Louvers furnished in 4-ft. sections, hinge either side for easy servicing.



30° CROSSWISE SHIELDING. Porcelain reflector provides comfortable 30° crosswise shielding, adds substantial strength and rigidity to the fixture.



NEW RIBBED CON-STRUCTION. Reflectors reinforced by die-embossed ribs between apertures. Ribs add lateral stability, prevent spreading, maintain straight fixture

IMPORTANT!

Here's why only

PORCELAIN ENAMEL

is used for CEI reflectors!

An industrial lighting fixture is no better than the wearing qualities of its reflecting surfaces. The lasting qualities of baked enamel reflectors are questionable in industrial applications. Only porcelain enamel guarantees a lifetime of service at the least cost.

Porcelain enamel does not decay or change with age because it is inorganic -nothing but rock-like minerals that are actually melted and fused to the base metal under extremely high temperature (1400-1600°). The result is a

CFI MEANS COMFORT FOR

CALL OR WRITE YOUR NEAREST DAY-BRITE REPRESENTATIVE FOR THE

THE NEW DAY-BRITE

LIFETIME INDUSTRIAL SERIES—
ONLY INDUSTRIALS WITH FULL
8-FOOT, ONE-PIECE, PORCELAIN
ENAMELED REFLECTORS

THE LIFETIME

CFI-10

WITH 10% UPWARD COMPONENT

flint-hard, indestructible bond of metal and finish that is unaffected by time, heat, moisture and other harmful elements.

No baked enamel finish can assure you the non-yellowing, noncorrosive reflection surface that porcelain enamel does. There are no tiny surface pores in porcelain enamel. Any dirt or stain is external and is easily wiped away.

Because of its undisputed superiority,

specially formulated porcelain enamel with a reflector factor of 85% or more is the one and only finish Day-Brite uses on the reflection surfaces of the CFI-25 and the CFI-10



Microphoto shows how metal and porcelain enamel fuse together to form lifetime bond.

in fact — as well as in name — a Lifetime industrial lighting value.

Sets a new high standard for industrial lighting fixtures! 10% uplighting reduces glare and lessens brightness contrasts. Full 8-foot, one-piece, porcelain enameled reflectors featuring new super-rigid ribbed construction. Runs line up perfectly, stay perfect. Available for 8 ft. Slimline, 4 ft. Rapid Start and the newly developed 8 ft. High-Output Rapid Start lamps. Engineered and built to give a lifetime of service.



SPRING-LOADED SOCKETS. Firm lamp contact, firm seating. Metal clad for positive alignment and protection against breakage. Individually replaceable.



COOLER, CLEANER
OPERATION. Diagram
demonstrates "up-draft" action
through apertures. Constant flow
of air keeps dust from settling,
reduces operating temperature.



FAST, SIMPLE MAIN-TENANCE. Reflectors on or off in seconds, fasten to channel by hand-operated 2" wingnuts. Porcelain enamel wipes clean quickly, is noncorrosive.

INDUSTRY!

COMPLETE QUALITY STORY



Day-Brite Lighting, Inc., 5405 Bulwer Ave., St. Louis 7, Mo. In Canada: Amalgamated Electric Corp., Ltd., Toronto 6, Ontario.

A PRODUCTS

(Continued from page 250)

SLIDING DOORS

• A sliding glass doorwall is packaged for low-cost delivery so that the knocked-down unglazed door and frame fits into a carton 5 by 8 in. in girth with a length corresponding to the greatest dimension of the door unit. The package contains everything required for the assembled aluminum and hardwood ash door except the glass. Sizes available range from 6 ft by 6 ft 10 in. to 16 ft by 6 ft 10 in. The average unit can be

assembled and glazed by a two-man crew in about 30 min. Horizon Door Co., 1424 Flower St., Glendale 1, Calif.



The heart of the NEW

INVENTION is the

ADAPTO - CLUTCH
The first in the

world to take

drawing leads of ALL DEGREES

and diameters

9H to 6B.



• All-aluminum sliding glass doors are constructed of sealed, heavy-duty aluminum extrusions with corners of rigidly secured, heavy-gage fittings. An alumilite finish gives a smooth appearance and provides corrosion resistance even under extreme salt air conditions. Ador Sales, Inc., 1631 Beverly Blvd., Los Angeles 26, Calif.

• Steel frames for sliding glass doorwalls, completely weather-sealed, are available with two, three or four panels, all 6 ft 10 in. high. Known as the "Gardena" series, the new frames can be specified for either right or left venting. Steelbilt, Inc., 18001 So. Figueroa, Gardena, Calif.

MAGNETIC DOOR CATCH



• A magnetic door catch that fits between cabinet door and shelf has a powerful magnet which floats on a spring to cushion the door as it closes and hold it away from the cabinet frame. The catch is engineered to eliminate slamming and to assure perfect alignment with maximum holding power. The Stanley Works, New Britain, Conn.

GLASS-SEALING TAPE

• No. 162 Elastic Compound Tape can be used to seal glass in frames and channels of steel and aluminum window sash and thermopane-type glass in refrigerated display cases. The jet-black, rubbery tape releases readily from its backing, says the manufacturer, holds its shape and will not flow out when seams are riveted or bolted. Presstile Engineering Co., 3798 Chouleau Ave., St. Louis 10, Mo.

(Continued on page 258)



for leads of ALL DIAMETERS!

KOH-I-NOOR'S Lead Holder with the ADAPTO-CLUTCH feature is the first in the world that takes drawing leads of all degrees in all diameters!

The ADAPTO-CLUTCH takes all leads from 9H to 6B. The ADAPTO-CLUTCH holds all degrees tightly. The ADAPTO-CLUTCH is guaranteed slip-proof against vertical pressure and turn-proof in all lead sharpeners and machines.

THE No. 5616 HOLDER WITH THE ADAPTO-CLUTCH TAKES LEADS OF ALL DEGREES AND ALL DIAMETERS!

See and buy this sensational New No. 5616 holder today . .

• \$1.50 each
(No Fed. excise tax)

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FOR BEST RESULTS,
ALWAYS USE KOH-I-NOOR #2200 LEADS, AVAILABLE IN 17 DEGREES.

KOH-I-NOOR PENCIL COMPANY

BLOOMSBURY, NEW JERSEY







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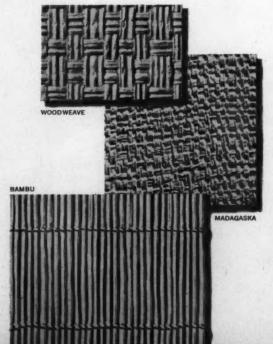
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How Insulite cut sheathing costs



tsoffit and s'3330 on new 144 room motel



Holiday Inn Hotel, Oklahoma City Architect: Ned A. Cole, Austin, Texas Consulting Architects and Engineers: Hudgins, Thompson, Ball and Associates, Oklahoma City, Oklahoma



Insulite Sheathing saved \$2000—cut application costs \$80 per thousand square feet compared with wood on this Holiday Inn Hotel job. Two men can sheath 1,000 square feet in a half-day or less. Reduces application time as much as 43%. Insulite Sheathing has great bracing strength. Waterproofed throughout with asphalt. Eliminates need for building paper. Reduces cutting and matching loss.



Primed Graylite saved \$1330 on soffits compared with cost of plywood. Made of the same material as tough weather-resistant Bildrite, Primed Graylite is prime coated at the factory. Paint flows on easily, smoothly. Asphalt impregnated. Resists warping, buckling. No delamination problem. Available in ½ and ¾ thickness and 4' widths. Lengths from 6' to 12' reduce waste.

Build and insulate with double-duty

See how Insulite can help keep costs down, quality up on your next job—on sidewalls, roots, party walls, ceilings, floors, soffits, gable ends and more. Write Insulite, Minneapolis 2, Minnesota for "architect's portfolio."

The original structural insulation board



INSULITE DIVISION, Minnesota and Ontario Paper Company, Minneapolis 2, Minnesota

A I PRODUCTS

(Continued from page 254)

GARAGE DOOR

• A self-lifting orerhead garage door, fabricated in leather-grain embossed aluminum, opens entirely on the inside of the garage, requiring only 6 in. of overhead space and 6 in. clearance from door to the car's rear bumper. A spiral cable drum and torsion spring facilitate opening the door. Produced in the standard 7-ft-high, 8-ft-wide size, the door is packed in a single carton. Reynolds Metal Co., 2500 So. Third St., Louisville, Ky.

CARPORT



• A carport that can be attached to the side of a house or stand free is also recommended by the manufacturer for use as a dining porch, breezeway or cabaña. Called AlumaPorte, it consists of a 20- by 10-ft roof of interlocking aluminum slats, reinforced by steel rafters and supported by steel posts. The roof is available in nine baked enamel colors, striped or solid. Orchard Brothers, Inc., 63 Meadow Rd., Rutherford, N. J.

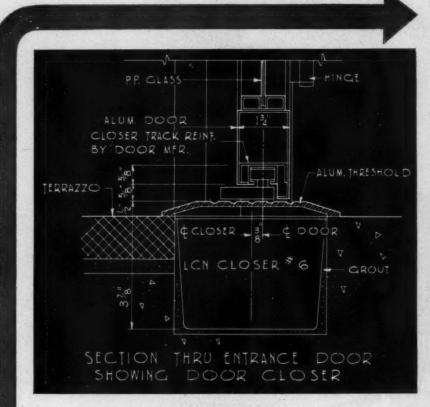
FIRE DOORS



• A new mineral core material is now being used in Weldwood Fire Doors. Known as Weldrok, the lightweight "synthetic stone" is a low-density material of cellular construction which is incombustible, inert, dimensionally stable, provides a large measure of heat and sound insulation, has high structural strength in relation to its weight, is immune to termites, decay and fungus, and does not harm wood tools. Awarded the Underwriters' Laboratories label for B and C openings, the Weldwood Fire Door with Weldrok core is 134 in. thick and has maximum dimensions of 3 ft 6 in. by 7 ft. Available in a wide variety of face veneers, the door is composed on one side (from top to bottom in picture) of face veneer, phenolic resin glue film, crossbanding, phenolic resin glue film and Weldrok. U. S. Plywood Corp., 55 West 44th St., New York 36, N. Y.

• Wood-faced fire doors for home and commercial installations have been approved by Underwriters' Laboratories for use in vertical shafts as a fire barrier, giving a minimum of 1 hr fire protection. The Roddiscraft B Label Fire Door is faced on both sides with plywood veneer and has a core of a special non-combustible asbestos compound. The lightweight door is produced in all available wood species and in standard door sizes with widths up to $3\frac{1}{2}$ ft and heights up to 7 ft. Roddis Plywood Corp., Marshfield, Wis.

(Continued on page 260)



CONSTRUCTION DETAILS

for LCN Floor Type Door Closer, Shown on Opposite Page
The LCN Series 2-4-6 Closer's Main Points:

- 1. Full rack-and-pinion, two-speed control of the door
- 2. Mechanism concealed; lever arm disappears under door
- 3. Door hung on regular butts, its weight carried independently of closer
- Closer easily adjusted or serviced without taking door down
- Installed with or without threshold; may be flush with threshold or with floor
- 6. Used with wood or metal doors and frames

Complete Catalog on Request—No Obligation or See Sweet's 1954, Sec. 17e/L

LCN CLOSERS, INC., PRINCETON, ILLINOIS

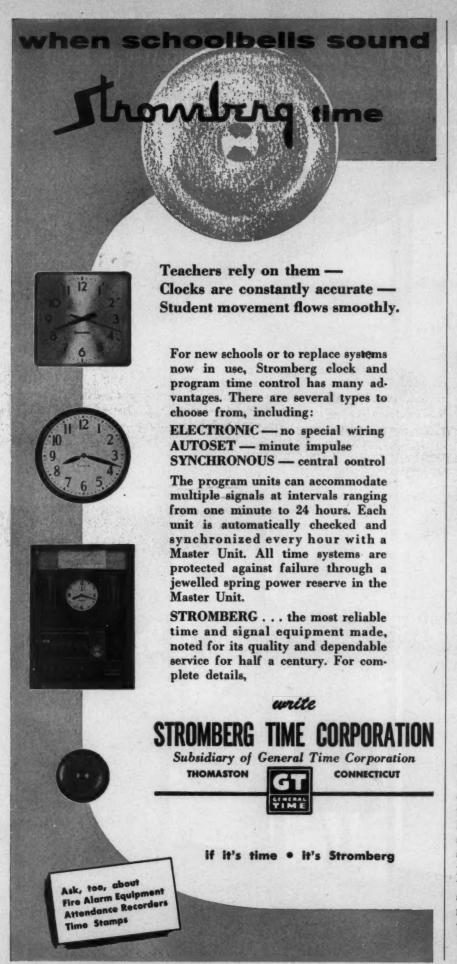


MODERN DOOR CONTROL BY LCN. CLOSERS CONCEALED IN FLOOR

NEW PLANT OF SAWYER BISCUIT COMPANY DIVISION OF UNITED BISCUIT COMPANY OF AMERICA, MELROSE PARK, ILLINOIS

LCN CLOSERS, INC., PRINCETON, ILLINOIS





A PRODUCTS

(Continued from page 258)

DOORS



• The Jalousie Storm Door, with 4-in. louvers designed to provide weather-proof overlapping, is a full inch thick with a frame of 1-in. tubular extruded aluminum sections for added strength and rigidity. Stainless steel weather-stripping along the vertical edges of the louvers gives an added measure of protection. The aluminum screen panel, which mounts on the inside of the door, has a resting ledge which maintains the screen in true vertical alignment. The Eagle-Picher Co., 900 American Bldg., Cincinnali 1, Ohio.



• A lightweight aluminum door that has the appearance of a solid aluminum unit actually features a "sandwich" construction of an impregnated, moisture-resistant honeycomb core and hardboard reinforcing. Suitable for exterior as well as interior use, the door will be available in either butt hung or offset pivot models. The doors are offered with a solid panel or with window-lites and louvered openings. All windows are mounted with a foam vinyl to cushion the glass against slamming and jarring. The Kawneer Co., Niles, Mich.

(Continued on page 265)

What's
the
difference
between
Architectural
Terra Cotta
and
Ceramic

Veneer?

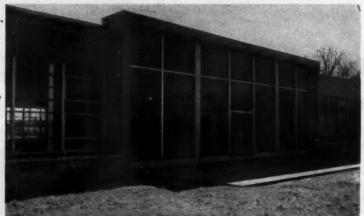


YONKERS
PUBLIC SCHOOL #30
FLEETWOOD, N. Y.
Edward Fleegle

tward Fleagle
-Architect

Frank Angelilli
Construction Co., Inc.
—Ruilde

Spandrels 3'7" wide and 163' long are composed of Architectural Terra Cotta units approximately 21" x 24". Color is a light mottled green.



POTTER
AERONAUTICAL
FACTORY
UNION, NEW JERSEY
Stephen J. Potter
—Architect

The Ferber Company
—Builder

Ceramic Veneer units, 14" thick, are aquamarine in color.

Machine-made terra cotta with a maximum overall thickness of 1½", in individual slabs not to exceed 540 sq. in., is referred to as Ceramic Veneer. It requires no metal anchorage...adhesion of the mortar to the Ceramic Veneer body and the masonry backing creates a monolithic wall. Anchor type Ceramic Veneer is also available.

Architectural Terra Cotta, anchor type, in thicknesses exceeding 14", is recommended where the architect desires large scale slabs up to face sizes not exceeding 26" x 36". Ribs or scoring are pro-

vided on the backs of such units.

Both Architectural Terra Cotta and Ceramic Veneer are custom-made in an unlimited range of colors and textures for interiors or exteriors. Simple soapand-water washings retain original richness and beauty while assuring minimum maintenance.

Construction detail, data, color samples, estimates, advice on preliminary sketches, will be furnished promptly without charge on Architectural Terra Cotta and Ceramic Veneer.



FEDERAL SEABOARD TERRA COTTA CORPORATION

10 East 40th Street, New York 16, New York PLANTS AT PERTH AMBOY AND SOUTH AMBOY, NEW JERSEY



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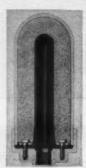
with the NEW Josam

SHOCK ABSORBER

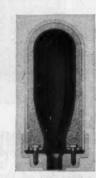
simple...trouble-proof...easy to install!

• Now, you can provide permanent protection against the annoyance and destructive action of water hammer—with the new Josam Shock Absorber. Water hammer is unpredictable. It happens in the finest installations—it happens without warning! It is a common problem on pipe lines where there are quick closing faucets and valves, spring operated mechanisms and similar devices.

The new Josam Shock Absorber gives you "hospital quiet" in all plumbing lines. Due to the specially designed Absorbo tube and insert, the Josam Shock Absorber dissipates the thrust and impact of the water entering the tube. As the shock recedes, the tube and insert regain their original form, ready to receive the next shock impulse. To eliminate water hammer permanently . . . specify them on all piping installations. Send coupon for descriptive literature.



Cutaway view showing Absorbo tube and in-



Showing how Absorb tube and insert expans to absorb shock.



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New addition to Sister Kenny Institute, Minneapolis, Minn. Lange and Raugland, Architects and Engineers. James Brunet and Austin Lange, Associate Architects. Knutson Construction Company, Contractor.

How the SISTER KENNY HOSPITAL solved a difficult problem

To provide wards in the new wing to the Sister Kenny Hospital with southern exposure meant having the window wall within 50 feet of an apartment building.

Owens-Illinois Light-Directing Glass Block were chosen for the window system to provide necessary ward privacy with no sacrifice of daylight. These panels of glass block restrict sight completely yet, because of their design, direct daylight towards the ceiling where it is diffused throughout the wards.

Owens-Illinois Glass Block* do more than provide privacy and let in light!

In kitchens and laundries high humidity conditions do not affect glass block panels—they can't rust or rot.

In laboratories glass block seal against the infiltration of dust and dirt.

In nurseries glass block provide an abundance of daylight with exact temperature control.

In operating rooms glass block provide daylight and help reduce air conditioning costs. Because a panel is easy to clean it helps maintain sanitary conditions.

In hospital corridors light can be borrowed from outside rooms and at the same time provide privacy in both vision and sound.

In street level rooms glass block provide privacy and light without use of shades or blinds.

Before you design a new building, or remodel an existing one, investigate the many advantages Owens-Illinois Glass Block provide. Write for the information you want. Kimble Glass Company, subsidiary of Owens-Illinois, Dept. AR-11, Toledo 1, Ohio.

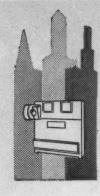
*Formerly known as INSULUX.

OWENS-ILLINOIS GLASS BLOCK
AN (1) PRODUCT

OWENS-ILLINOIS

GENERAL OFFICES . TOLEDO 1, OHIO

towering

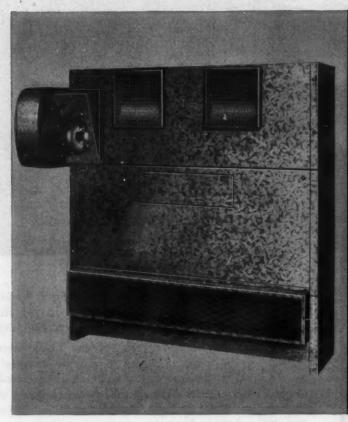


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WATER SAVING COOLING TOWER

with All-Metal hot-dip galvanized construction for longest life — fastest heat transfer



FEATURE FOR FEATURE ACTUE GIVES MORE

- Modern, compact all-metal construction no wood to rot, no painting required.
- Steel is completely hot-dip galvanized after fabrication for maximum rust and corrosion protection.
- 3 Quiet, blower-induced constant volume air flow.
- 4 Wetted metal deck principle—fastest heat transfer.
- 5 Pumps built specially for cooling tower service.
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- 8 Full capacities delivered as rated.
- 9 Can be installed in any location indoors or out.

Your clients will receive maximum cooling tower value for their dollars when you recommend and specify ACME. Built by a firm with 35 years' experience in serving the refrigeration and air conditioning industries, ACME cooling towers combine

advance design with quality construction. This means top performance and long life service with maximum maintenance cost. Write today for your copy of the ACME Cooling Tower catalog.

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T. N. Inglis TEXAS, San Antonio
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(Continued from page 260)

NEW FLOORING

- · New asphalt tile and plastic floor covering products introduced by Armstrong Cork include a Terrazzo Corlon vinyl plastic flooring in six patterns, two patterns in a Woodtone asphalt tile, 14 patterns in Service Gauge Excelon plastic asbestos tile and one new pattern in Custom Cork Tile. Armstrong Cork Co., Lancaster, Pa.
- · Self-Adhering Tile is a new rubber tile which can be applied over practically any type of sub-floor, according to the manufacturer, without using any adhesive. The adhesive is applied to the tile in an even coat during manufacture and is sealed air-tight by a sheet of polyethelyne plastic which is removed before installation. The tiles are available in 52 colors and styles. Robbins Floor Products, Inc., Tuscumbia (Muscle Shoals), Ala.



- · Vinyl floor tiles, also by Robbins Floor Products, molded in 9- or 12-in. squares, have waffle-shaped undersides that conform to wood, concrete or tile surfaces without use of adhesives. The air pockets absorb sound, provide insulation and make the tile resilient. For installation the blocks are fitted tightly edge to edge in any desired pat-
- · The newest addition to the line of Amtico Permalife vinyl floor tile is Mosaic Design. This pattern supplements the recently announced Terrazzo Design and the plain and marbleized colors already available. American Biltrite Rubber Co., Inc., Trenton 2, N. J.

FIREPROOFING CONCRETE FLOOR

· A new method of fireproofing a Cofar concrete floor consists of applying vermiculite acoustical plastic directly to the underside sheets of Cofar. Cofar is a corrugated steel'sheet which serves both as a form for concrete and as reinforcement. Both Granco and the Vermiculite Institute participated in tests on the new method at the Underwriters' Laboratories. Granco Steel Products Co., Granite City, Ill.

(Continued on page 268)

DESIGN MAGIC!



Alsynite offers unlimited design possibilities. Wherever translucent beauty is desired, use Alsynite.



ALSYNITE provides perfect glareless lighting in this prize-winning Seattle school.



ALSYNITE offers a range of 19 beautiful, permanent colors, corrugated and flat.



PARTITIONS CEILINGS WINDOW WALLS PATIOS CARPORTS

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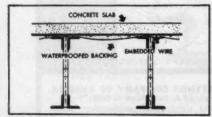
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\$5-million Bigelow Apartments, at the top of Pitts-burgh's famed Golden Triangle tower 20 stories, contain 465 units all air conditioned. Steeltex Floor Lath provides reinforcement for all floors. Arthur E. Tennyson, Architect. Martin C. Knabe, Structural Engineer. Behrman & Passel, Contractors.



New 3-story addition to Shaler Township High School added 20 classrooms, upped accommodations from 750 to 1400 students, cost \$1.35 million, has gym, auditorium, three shops, offices and locker. Steeltex Floor Lath on all floors. Charles M. & Edward Stotz, Jr., Architects. Geo. H. Chilli, Contractor.



NOTE: In the cross section the weight of the wet concrete forces the backing away, which permits the galvanized steel mesh to assume its proper position in the slab. Steeltex floor lath also performs two other functions: It permits work on the floor below while pouring is in progress and retains moisture to assist proper curing.



\$13-million low rent public housing project, St. Clair Village, 79 buildings, 723 units in 3-story buildings, 366 units in 2-story row houses. Concrete floors poured over Steeltex. Marks, Fisher & Simboli, Architects. George Levinson, Design Engineer. Ragnar Benson, Inc., Contractors.

Why building designers in for reinforcing concrete

Pittsburgh, City of Vision, is one of the most progressive cities in America today. Once dirty and smoky and threatened constantly with floods, Pittsburgh, now undergoing a renaissance, is one of the country's cleanest cities.

A vast network of dams in the headwaters of the Allegheny and Monongahela make damaging floods virtually impossible. A stream purification program is well under way. A new \$5-millionper-mile east-west parkway, partially completed and in use, will speed traffic through the city's heart without cross streets or traffic lights. New skyscrapers, new research centers, new industrial plants, new parks, new off-street parking garages have brought about a boom in new apartments and public housing, new schools and hospitals, new shopping centers.

When buildings of this type are being designed, poured concrete decks are most desirable and when you pour concrete, it is only natural to specify Steeltex Floor Lath, the galvanized steel wire reinforcing which carries its form on its back (see cross section below left).



One man can roll out a 125' roll of Steeltex in a few minutes. Steeltex provides both waterproof form and steel reinforcement for concrete floors, roofs.



The \$3.5-million nurses home at University of Pittsburgh towers 14 stories, completely air conditioned, contains library, recreation room, reception rooms, cafeteria seating 400—comfortable living quarters for 600. Steeltex in upper floors. Ingham, Boyd & Pratt, Architects. Trimble Company, Contractors.

Pittsburgh specify STEELTEX® floors and roofs

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and reinforcement for concrete because Steeltex can be rolled out like a carpet, stretched with a special tool, and clipped tightly in place by one man (see photo below left).

Steeltex with its waterproofed backing also prevents waste of concrete by reducing leakage to a minimum from the freshly poured slab—craftsmen can continue working on the floor below without getting splattered. Expensive clean-up time is eliminated.

Steeltex insures a strong floor because embedment of steel reinforcing takes place automatically (see note below left). Steeltex allows concrete to cure slowly, properly—guards against excessive cracking—can be installed over any type of joist—will support ample safe loads from 109 to 886 lbs. per square foot depending on spacing of joists and thickness of slab. No wonder Steeltex has been the choice of architects, engineers, contractors, and building owners alike, not only in Pittsburgh but wherever concrete slabs are poured over joists.

If your building plans call for poured concrete floors, roofs, plaster walls or ceilings, masonry veneer or Portland cement (Stucco) exteriors, there's a type of Steeltex reinforcing that will do the job better, faster, with less effort at lower overall cost.

For complete details see the Steeltex catalog in Sweet's or write for your free copy of a new 24-page illustrated booklet "Pittsburgh Steeltex, Backbone of Concrete, Plaster, Mortar." It's yours for the asking.

STEELTEX®

manufactured by the

Pittsburgh Steel Products Company

a subsidiary of Pittsburgh Steel Company
Pittsburgh 30, Pa.



St. Clair Hospital, Mt. Lebanon Township, Pa., serving the growing South Hills area has 116 beds—cost \$1.34 million. Steeltex used in floors. Kuhn & Newcomer, Architects. R. A. Zern, Structural Engineer. H. Busse, Contractor.



Brentwood-Whitehall Shopping Center built on two levels has 25 shops in 210,000 square feet—80% are air conditioned—parks 1,000 cars. All floors reinforced with Steeltex. Forsyth & Blezard, Architects. Leland Cook, Structural Engineer. Landau Bros., Contractors.



Mammoth decks in this fabulous \$10-million terminal building at \$42-million Greater Pittsburgh Airport, were poured on Steeltex Floor Lath. Last year 2.5-million people including travelers spent \$20 million at ticket counters, restaurants, nightclub, theater, hotel and shops. Joseph Hoover, Architect. Leland Cook, Structural Engineer. Dick Construction Co., Contractors.

Here are other recent buildings in Pittsburgh and vicinity using Steeltex:

Amberson Gardens
Bedford Dwellings
Center-Negley Apartments
Greentree Apartments
Hebron Grade School
Kennilworth Apartments
Pennsylvania College for Women (Administration Building)
Shadyside Presbyterian Church (Chapel)
St. Augustine's High School
Talbot Towers (Housing Project)
Union Railroad (Office Building)
Westinghouse Educational School
Westinghouse Electric Corporation (Atomic Project Buildings)



A PRODUCTS

(Continued from page 265)

PLASTIC-COATED HARDBOARD

• A prefinished, plastic-coaled hardboard wall panel is produced in tile patterns, solid tones and selected wood grains 16 in. square and ½ in. thick. The Barclay Square is precision-grooved on all four sides and is applied with a specially designed metal lock strip, which is invisible after the panels have been linked. The squares are packaged 18 to a package weighing less than 28 lb, in order to guard against damage. Barclay Mfg. Co., Inc., 385 Gerard Ave., New York, N. Y.

WALL AND CEILING TILE

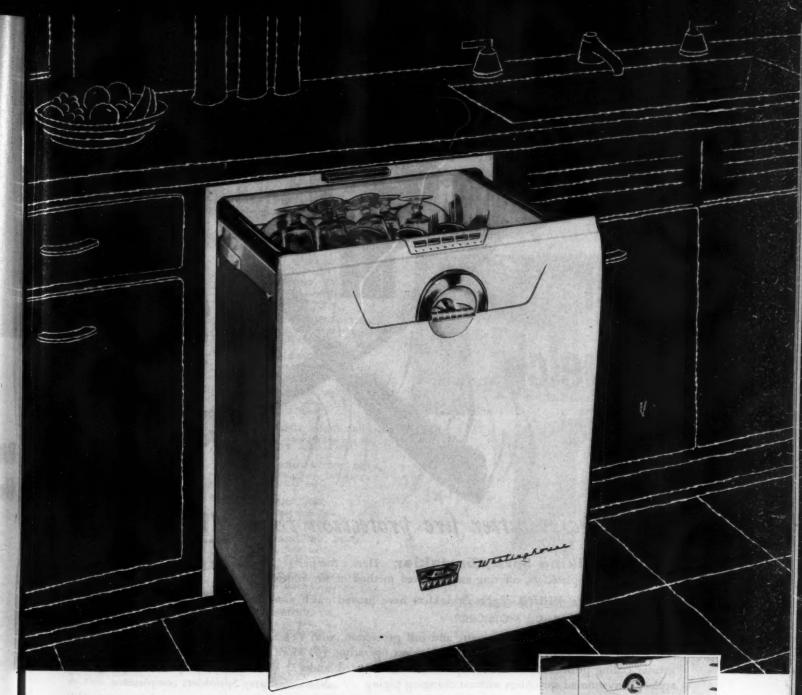


• Decorative wall and ceiling tiles have full 28-gage steel bases finished in non-tarnish 24-karat gold plate, natural and antique copper, bronze, brass and high-gloss chrome, all of which are highly burnished, then coated with a tarnish-resistant baked clear enamel. Standard basic tile sizes are 4½, 6 and 8½ in. The installed tile has a thickness from wall of 3/32 in. and weighs about 1 psf. Roselle Tile Co., 3411 Stone Way, Seattle 3, Wash.



• Self-spaced ceramic tile ensures perfect uniformity in tile installation. Two small projections, called "lugs," which extend exactly 1/32 in. from each of the four edges of the 4½-in. tile, guarantee neater installation with uniform 1/16-in. grout lines when adjoining tiles are placed together. Royal Tile Mfg. Co., Fort Worth, Tex.

(Continued on page 272)



THE NEW DWC

WESTINGHOUSE DISHWASHER

Offers a New Sales "Plus"
... Sanitizes as It Washes!

Now, the homes you build or modernize can be made more desirable than ever before by including the Westinghouse Dishwasher.

Why? Because this new 1955 model offers owners something new and different—dishes are not only washed sparkling clean—but also sanitized in water guaranteed by the Dishwasher to be of germ-killing temperature. You offer your prospects an appliance that not only saves time and work but protects family health.

FLAT FRONT MODEL ALSO AVAILABLE
Under-Counter Model DWD-24 lines up with
adjacent base cabinets for that "custombuilt kitchen" appearance.

This has been achieved without sacrificing any of the super capacity or the quick, easy installation for which Westinghouse Dishwashers have been noted.

Other new features include flexible cycle control for rinsing only or for plate warming, visual indicator dial for checking progress of cycle, and a new rack designed for easy loading.

The DWC Series, with beautiful contour front, is available in 24"-wide Under-Counter, 24" Freestanding, 48" Dishwasher-Sink Combination, and 24" Portable Models. Complete information available from your Westinghouse Distributor, or write direct.

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WESTINGHOUSE ELECTRIC CORPORATION

ELECTRIC APPLIANCE DIVISION

MANSFIELD, OHIO

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TORONTO, ONTARIO Viking Automatic Sprinklers (Canada) Ltd., Mr. R. G. Wallace

TULSA, OKLAHOMA
Texas Automatic Sprinkler Co.,
Mr. D. W. Smith

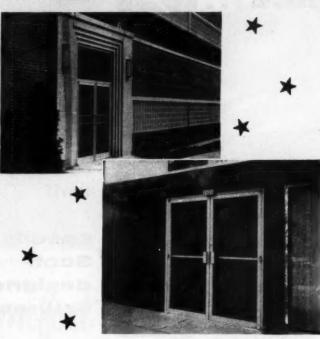
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Beauty



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Custom or stock design, MARMET extruded aluminum narrowline doors are not only striking in appearance, but are clean-cut design permitting great structural strength without bulk, providing maximum light or glass area. In their construction only the finest extruded aluminum is used: alloy 6063-T5 (63S-T5).

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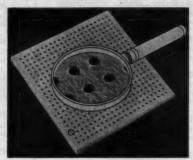
A 3 PRODUCTS

(Continued from page 268)

INSULATED CEILINGS

• Steel-Pride suspended thermal-insulated ceilings are formed by suspending a supporting grid system of inverted interlocking T-shaped sections either from structural members of a new construction or from an already existing ceiling and then resting prepainted steel panels and ¾-in.-thick bats of fiberglas insulation on the flanges of the grid bays. Steel Service Mfg. Co., Steubenville, Ohio.

ACOUSTICAL TILE



- A linen-finish drilled wood-fiber acoustical tile has a finely knurled texture that gives the appearance of a woven fabric, reflects light without showing dull spots or high-glare areas, and can be repainted without danger of affecting a ceiling's acoustical efficiency. Linenfinish Acoustifibre is available in standard 12- by 12-in., 12- by 24-in. and 24-by 24-in. sizes, ½, 5% and ¾ in. thick. National Gypsum Co., 325 Delaware Ave., Buffalo 2, N. Y.
- Colored fiber acoustical tile comes in four blends, with the bevels as well as the tile colored to create a monolithic effect. Repeated washing or painting has no effect on the sound-conditioning efficiency of the material. Varitex cane fiber tile is produced in thicknesses of ½, 5%, ¾ and 1 in., in sizes of 12 by 12 in. and 12 by 24 in. The Celotex Corp., 120 So. LaSalle St., Chicago 3, Ill.

ACOUSTICAL TILE MASTIC

• Accu-mastic, developed for the installation of acoustical tile, is reported to form a strong, permanent bond in a few days yet remain soft and pliable enough so that stresses can move the tile a fraction of an inch without rupturing the bond. It is claimed that this flexibility is retained even near heating ducts and pipes. The product is offered in 5-gal. kits and 1-gal. cans. Dicks-Pontius Co., Dayton, Ohio.

(Continued on page 276)

INVISIBLE RADIANT HEATING



with THRUSH RADIANT HOT WATER

HEAT HOMES BETTER AT LOWER COST

NOW YOU can provide the finest automatic heating comfort in the homes you plan or build, for Thrush Radiant Hot Water Heat is well within the budget of the smallest home. It is one of the most efficient, economical and completely automatic controls for radiant hot water heat offered today.

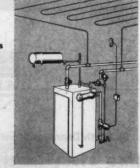
Fuel is saved because there is never any overheating. There is no chilling or discomfort, because radiant heat is present. Room temperature varies less than one-fifth of one degree. Installation costs are reduced. Also, a plentiful supply of hot water for kitchen, laundry and bath is available the year 'round from the regular heating boiler. Get the facts now!



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The Thrush equipment shown at right maintains room temperature without noticeable variation throughout the heating season.



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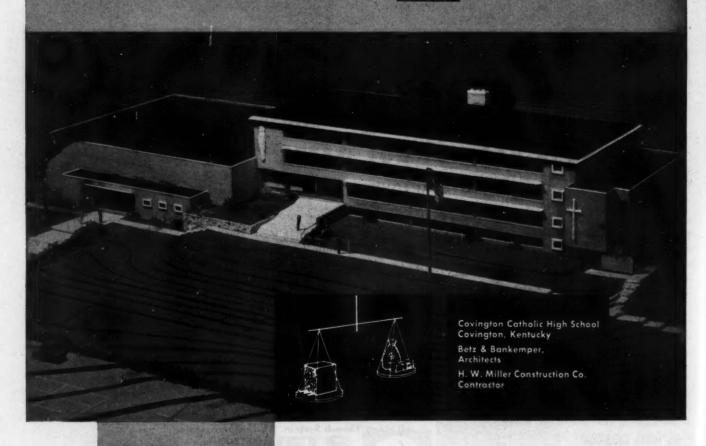
A comparative cost analysis of a typical bay (16' wide x 61' long x 4 floors high) in this school building showed that flat plate reinforced concrete, with columns cast in round forms, was \$1300 less expensive than other conventional types of construction. This saving helped attain an average cost of only \$11.77 per sq ft. Furthermore, according to the architect, reinforced concrete gave "... the best fireproofing" and "... a structure that will take severe abuse without springing or deflecting."

Reinforced concrete structures also save money by saving erection time. Work can start sooner, because all construction materials are available locally in a matter of days instead of months. In addition, reinforced concrete can be erected faster than other types of structures. Take advantage of reinforced concrete on your next job.

cost analysis shows flat plate

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Joliet, Ill . Long Beach, Calif. . Newburgh, N. Y.

Manufacturers of Aristoflex • Confetti • Parquetry • Asphalt Tile • Cork Tile • Plastic Wall Tile

(Continued from page 272)

HARDWOOD PANELS

• Temper-Treated Forest Board panels are claimed to be extremely durable for both indoor and outdoor applications and to need no prime coat. Made of Douglas Fir fiber pressed into 4-ft panels up to 16 ft long, the hardboard is available in thicknesses of ½, ¾6 and ¼ in. Forest Fiber Products Co., Forest Grove, Ore.

PLYWOOD SHEATHING

• A plywood sheathing guaranteed for the life of any house is made possible by the development of a new formula phenol-formaldehyde glue which has water, weather and mold resistance. Lifetime Sheathing has sealed edges which completely enclose the panel at its most vulnerable points. Available in 4- by 8-ft panels ranging in thickness from ½6 to ¾ in., the sheathing comes in packages strapped for easy handling. Georgia-Pacific Plywood Co., 270 Park Ave., New York, N. Y.

ACOUSTICAL FORM BOARD

• Acoustical Form Board performs four functions in the roof and ceiling structure: it serves as a permanent roof deck form, as an incombustible interior ceiling and as an acoustical ceiling and also provides roof insulation. The lightweight, porous board can be installed by the standard poured-in-place methods using bulb tees and reinforcing mesh with gypsum concrete. It has a noise reduction coefficient of 0.75 and is available in sizes of 32 by 48 by ½, 1 and 2 in. and 24 in. by purlin spacings up to 96 in. Ovens-Corning Fiberglas Corp., Toledo 1, Ohio.

BUILDING PANELS



· Prefabricated building panels made of honeycomb cores of kraft impregnated with Bakelite phenolic resins sandwiched between thin aluminum sheet facings are strong, lightweight and moisture-proof, according to the manufacturer. The honeycomb core also provides insulation and resistance to outside temperature. Panels are available in natural aluminum which may be painted, and also in baked enamel in a wide selection of colors. A typical roof panel 3 in. thick measures 4 ft by 4 ft and weighs 75 lb. Modern Metal Craftsmen, Inc., 2000 N.E. 146 St., No. Miami, Fla.

INTERLOCKING SHINGLE



• An interlocking, asphalt strip shingle, reportedly highly wind-resistant, is called Lok-Tab because it is "locked" to the roof. A center butt lock allows the corners of erch tab to lift enough to form a channel through which high winds can flow off harmlessly, but not enough to allow blasts to rip off the roofing. The shingles are 24 by 18 in., with a 2-in. headlap and an 8-in. exposure. The Ruberoid Co., 500 Fifth Ave., New York 36, N. Y.

(Continued on page 280)



IN LOUVRED CEILINGS

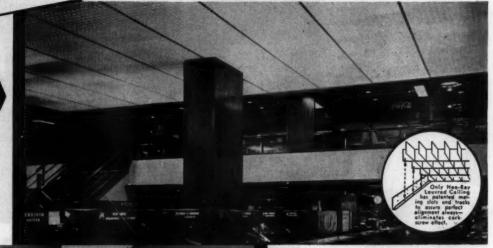
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Neo-Ray is recognized as the pioneer in the development and manufacture of Louvred Ceilings . . . with more years of Louvred Ceiling "know-how" than any other manufacturer. Look around . . . you'll see Neo-Ray ceilings everywhere . . . coast-to-coast . . . and throughout the world.

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for removable sections, continuous unbroken pattern between parallel runners (tracks).



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for hinged sections, continuous unbroken louvre pattern in all directions.

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for CU and ML type louvred ceilings to create custom designed patterns. Now you can louvre only a part of the ceiling by closing the gap between ceiling and louvres with Neo-Ray Fascia Plates.

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with which this standardization is regarded throughout the country. This "C-I" insignia on cost iron soil pipe and fittings is your assurance that the products so marked meet the standards adopted. This "C-I" symbol means interchangeability. The "C-I" labelled products of any manufacturer will member with the "C-I" marked patterns of another producer.

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TIME and COMMUNICATION

SYSTEMS

(Continued from page 276)

SHEET ALUMINUM JACKETING

• Protection for insulated pipelines and equipment both inside the plant and outdoors is provided by a sheet aluminum jacketing called Al-Cor-Jac. Corrugated for strength, expansion and contraction, the material is vapor, weather-, vermin- and fireproof. When used over 85 per cent magnesia, or where wet conditions exist, a vapor-proof barrier is included. Jacketing is

available in two forms: with vapor barrier, in rolls 100 ft long by 48 in. wide; and without barrier, in rolls 200 ft long by 48 in. wide. Aljon Manufacturing Co., Inc., Chestnut St. and Highland Pkwy., Roselle, N. J.





• All-steel swimming pools in a range of four sizes — from 33 by 16 ft to 105 by 35 ft — are now being produced by U. S. Steel Corp. Fabricated and installed by the American Bridge Division's engineers, the leak- and seepproof pools have bottom and side plates like bridge girders. U. S. Steel Corp., Pillsburgh, Pa.

GALVANIZING PROCESS

• Galvicon, applied by brush or spray method, offers a new approach for protecting iron and steel surfaces from corrosion. It combines with the base metal, creating an electrochemical union and thus offering true cathodic protection. It is available in ½-pint, 1-qt, 1-gal and 2-gal cans. Galvicon Corp., 40 W. 29th St., New York 1, N. Y.

CHANNELS FOR WIRING



• Unistrut channel and fittings have been approved by Underwriters' Laboratories for wiring lighting installations and for supplementary power wiring of machines, hand tools, motors and other lighting rows. Wires are laid in the channel and a simple closer strip snapped in place to close the channel slot. Fixtures can be attached at any point to provide spaced or continuous installations. Supplementary lines can be tapped from the channel for other uses. Unistrut Products Co., 1013 W. Washington Blvd., Chicago 7, 111.

RUBBER FOR ROADS

· Surfa-Sealz Pellets, synthetic rubber pellets about the size of pencil erasers, can be tossed into a mixing mill at an asphalt plant and break down in 60 sec, spreading rubber evenly through the mix. The manufacturers forecast that the pellets will break the bottleneck that has prevented the widespread use of rubber roads. The previous high costs of shipping pre-mixed asphalt and rubber will be lowered by the transportation possibilities offered by the pellets, which can be shipped in bags or drums and stored at the asphalt plant. Naugatuck Chemical Div., U. S. Rubber Co., Naugatuck, Conn.

(Continued on page 284)



126,000 Square Ft. ...spanned with LACLEDE STEEL JOISTS

Framing large areas presents no problem with these light-weight, open-web joists. Here, for example, is the 126,000-square-foot Service Building for Scruggs-Vandervoort-Barney, one of St. Louis' leading department stores. Scheduled for completion in early fall, this is one of many buildings throughout the nation erected with Laclede Straight Chord Steel Joists—the choice of more and more contractors for fast, economical construction.

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LACLEDE STEEL COMPANY

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interiors that are veritable Indoor Highways and need floor coverings which are grease-proof . . . resistant to alkalies, mild acids, fats, oils, naphtha and even gasoline.

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Nerman Oktahoma High School, winner, of the First Honor Award, 86th Armyal Convention of the A.I.A. (1954). Associated architects: Caudill, Revlett, Scott & Associates; Perkins & Will. First presented to architects and engineers in Architectural Record.

Photographer: Hedrich-Blessing

ive hundred and twenty dollars pays for one page of advertising in Architectural Record at the 12-time rate and delivery of facts on your products to those architects and engineers verifiably responsible for planning over \$1 billion of building monthly at current rates of construction.

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Based on periodic statewide checks of Dodge Reports against Architectural Record's own subscriber galleys over 85% (\$12.6 billions) of this huge building volume is coming from the boards of the Record's own architect and engineer subscribers.*

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- 2. Reader Preference—Architects and engineers have steadily voted Architectural Record their preferred magazine in 60 out of 67 readership studies SPONSORED BY BUILDING PRODUCT MANUFACTURERS AND ADVERTISING AGENCIES.

*Ask us for recent statewide checks showing the percentage of the total dollar volume of each major type of building that is verifiably planned by Architectural Record's own architect and engineer subscribers.



Architectural Record "Workbook of the active architect and engineered"

119 West 40th Street New York 18, N. Y. (Continued from page 280)

PEG-BOARD WALL FASTENERS

• An anchor kit for attaching Masonile Peg-Board panels to concrete, brick or any other smooth wall surface contains 10 anchors, 10 bolts and a can of adhesive, sufficient for attaching a panel up to 4 by 4 ft. No special tools are required. Surfaces to which the anchors adhere include Presdwood, plaster or gypsum wallboard. Masonile Corp., 111 W. Washington St., Chicago 2, Ill.

RELAY PANEL

• A special ASCO relay panel has been designed for use in cooking schools, restaurants, institutions, etc., where gasfired equipment is used, to shut off automatically the flow of gas to ovens, broilers, etc., should electrical power fail or drop below a minimum voltage level. Thus, in the event of voltage failure, gas burners will not be left on. Once power is restored, gas service can be reactivated by a key-operated contact. Automatic Switch Co., 390 Lakeside Ave., Orange, N. J.

ELECTRIC TRANSFER SWITCH

• The Zenith—a mechanically held, electrically operated transfer switch which is locked through a toggle action—eliminates springs, latches and other delicate mechanisms. The switch operates by electrically held relays which effect automatic control, transferring from normal source to emergency power upon circuit failure and returning upon resumption of normal power. Zenith Electric Co., Dept. ADN, 152 W. Walton St., Chicago 10, Ill.

AUTOMATIC INCINERATOR



• An outdoor, automatic gas-fired incinerator, Model 254 includes an automatic clock-dial which turns on the gas and lights the burner automatically and turns off automatically at the end of burning time. A positive-acting thermomagnetic valve controls the pilot at all times. Rated at 20,000 Btu per hour, the burner is 35 in. high by 22 in. wide by 26½ in. deep, with a top opening of 11½ by 16 in. Incineration Division, Bowser, Inc., Cairo, Ill.

HOME PRECIPITATOR

• The Electro-Staynew home precipitator is an electronic unit for removing airborne dust, dirt, soot, pollen and microscopic particles as small as 1,250,000th of an inch in diameter from the air. Available in two standard models, for 6 to 8 rooms and for 8 to 12 rooms, the unit can be installed in existing warm air heating or air conditioning systems. Dollinger Corp., 11 Centre Park, Rochester 3, N. Y.

SINK BOWL

• Pacemaker sink bowls of 18-8 stainless steel are now offered in popular sizes in the company's Lustertone line. The bowls, available in both single and double models, are completely sound-deadened. Elkay Manufacturing Co., 1874 S. 54th Ave., Chicago 50, Ill.

(Continued on page 286)



Now MY BOSS IS PROUD OF THE LETTERS & WRITE!

Since the Boss gave me an Underwood All Electric Typewriter, on only original letters, but carbon copies are sharp and clear. Just imagine you can make as many as you need with

a light touch of your finger
 ... Because electricity does
 the fatiguing work.

See and try the sensational All Electric at your local Underwood Office.

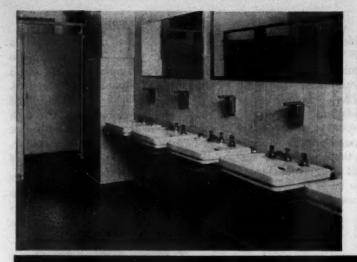
Underwood Corporation

One Park Avenue, New York 16, N.Y. Underwood Limited, Toronto 1, Canada Sales and Service Everywhere



TYPEWRITER LEADER OF THE WORLD

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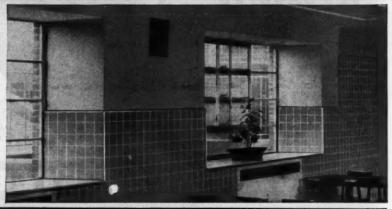




Woshroom, long Preparatory School New Rochelle, N.Y Eggers & Higgins, Architects

Classroom with attached toilet facilities Windemere Blvd. Elementary School, Buffalo, N.Y Duane Lyman & Associates, Architects





Corridor, Utica Free Academy, Utica, N.Y. Kinne & Frank, Architects.

Cafeteria, Archbishop Stepinac High School, White Plains, N.Y. Eggers & Higgins, Architects

For better design, better design it with TILE

American-Olean Tile is an exceptional material for today's schools.

It lets you specify beauty, with the practicality built-in. It requires less maintenance than any other surface, and upkeep is both easy and inexpensive.

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Please send me Booklet 205, Catalog of Tile Products.

Please send me Booklet 300 showing color photos of actual tile installations, abundant color scheme suggestions and specifications.



City	Zone	State
Address		
Firm Name		
Title		
Name		

(Continued from page 284)

MOVABLE PARTITIONS

· Movable office partitions are now being produced in blackboard and bulletin board panels. The new modular Partition-ettes are interchangeable with panels of conventional clear or frosted glass. No attachments to floors or existing structural walls are necessary. Arnot Jamestown Div., Aetna Steel Producls Corp., 730 Fifth Ave., New York, N. Y.

FIRE ALARM

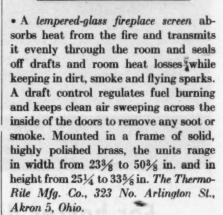
· A fire alarm which is only 15 in. long and weighs 3 lb produces a piercing whistle of 5 to 8 min duration which can be heard above intense industrial noise. The Fyr-Larm is a cylinder of compressed gas to which is attached an alarm horn connected to the interior of the cylinder through a valve which is activated when the temperature surrounding the unit rises above 136 F. Smaller units are made for home and store use. Fyr-Larm Co., Inc., Summit,

FIREPROOF FABRIC

· Infinity Fireproof Diffusion Cloth, a spun saran yarn, allows daylight to enter the room unimpeded and filters the glare from either light or reflections. Viewability through the window and ventilation are maintained at a high level. The material can be washed or cleaned by any method with any soap, detergent or chemical. Edwin Raphael Co., Inc., Holland, Mich.

FIREPLACE SCREEN





PERIOD FURNITURE



· Period furniture in the French Provincial, Louis XVI and Empire styles is offered by the Cassard Romano Co., Inc. Shown here is their version of a Louis XVI dining room featuring brass decorations and fluted posts and legs. Cassard Romano Co., Inc., 305-311 E. 63rd St., New York, N. Y.

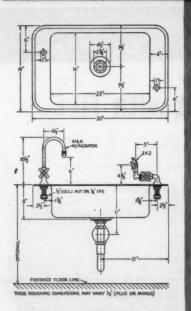
(Continued on page 288)

Now!

THE POPULAR HAWS DECK-TYPE DRINKING **FOUNTAINS**



in STAINLESS ST



HAWS Series 2300, Model No. 2350 (Pat. applied for)



Mau! The HAWS stainless steel Series 2200 and 2300 with all the features that have made the white enamel cast iron HAWS Series 2000 so popular for school classrooms. Raised and sloped mounting rim that keeps water off deck or table top...VANDAL PROOF socket flanges and fittings...chrome plated sink strainer with non-removable grid . . . and availability with any combination of HAWS faucets and fixtures. For Acid-Resisting Enamel finish, specify HAWS Series 2000.

Write today for illustrated Detail Sheets on 2000, 2200 and 2300 Series!



DRINKING FAUCET

1443 FOURTH STREET (Since 1909) BERKELEY 10, CALIFORNIA

YOU'LL WANT TO KNOW ABOUT THE

Improved Bethlehem Longspans

Bethlehem engineers have made a number of improvements in our Longspan Open-Web Steel Joists. The design has been changed, depths and span ranges have been increased, some odd depths have been eliminated, and the standard nomenclature has been changed to conform to that recently adopted by the Steel Joist Institute. A catalog fully describing the new Longspans has just been published by Bethlehem. The changes are so extensive that you will probably want to discard your old catalog and send for the new one.

CHANGE TO WARREN-TYPE TRUSS

By changing the design of the Bethlehem Longspan Joists from a Pratt-type to a Warren-type truss, additional strength factors have been gained.

The Warren-type truss enables the joist to take the stress-reversals encountered when joists are framed into columns as stiffeners, as well as stress-reversals caused, for example, by wind uplift in a heavy storm, or by unsymmetrical loadings of either floor or roof, without the need for counter diagonals.

Simply stated, the new Bethlehem Longspan provides added protection against uncontemplated loadings at no extra cost.

PROVIDE CLEAR SPANS UP TO 96 FT

Modern structures such as school auditoriums and gymnasiums, garages and supermarkets demand increasingly greater clear space, unhampered by columns. By increasing the depth of the Bethlehem Longspan to 48 in. and the span range to 96 ft, the usefulness to architects of these joists has been greatly increased.

OTHER IMPORTANT DESIGN CHANGES

By using a double-angle system of chords with separation to provide for the web, the new Bethlehem design



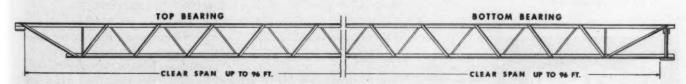
gives maximum lateral stiffness, making the joists easier to erect, and of course adding to the rigidity of the completed structure.

The separated pair of chord angles provides continuous slots in both the top and bottom chord for easy attachment of pipes, conduits and ducts, or the hanging of lighting fixtures, fans or heating units.

Pitched-top-chord Longspans now have a uniform pitch of 1/8 in. per foot, which simplifies the planning of pitched roofs. The type marks of the 18 in. and 20 in. Shortspan Joists have been changed to eliminate confusion with the Longspan series of the same depth.

WRITE FOR OUR NEW CATALOGS

We have just published a new catalog on Bethlehem Longspan Joists, describing all of the above changes and giving the new nomenclature and designations. We have also published a new catalog on our Shortspan Joists, in which the designations of the 18 in. and 20 in. sizes have been changed. A letter or postcard addressed to us at Bethlehem, Pa., will bring you copies of both catalogs by return mail.



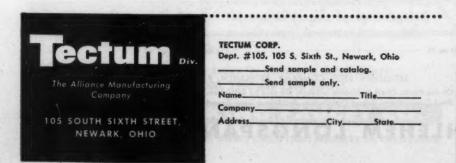
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM LONGSPAN JOISTS







A 13 PRODUCTS

(Continued from page 286)

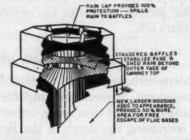
ELECTRONIC ELEVATOR TIMER

• The Traffic Sentinel, the latest electronic development for operatorless elevators, automatically controls the time delay at each floor stop. An infra-red light ray across the entrance of an elevator car counts incoming and outgoing traffic and adjusts door-closing time accordingly. Westinghouse engineers say the Sentinel will speed round-trip running time of automatic elevators. For maximum safety the elevators feature also "Saf-T-Edge" doors, which reverse at the slightest pressure. Westinghouse Electric Corp., 401 Liberty Ave., Box 2278, Pittsburgh 30, Pa.

ELECTRONIC THERMOSTATS

• An electronic system to control both heating and cooling in home developments uses two electronic thermostats, one of which is mounted outside the house. An electronic "brain" or relay amplifier automatically computes the heating, or cooling, needed to satisfy the signals from the two thermostats. Minneapolis-Honeywell Regulator Co., Minneapolis 8, Minn.

CHIMNEY TOP



• A chimney top redesigned for the Thulman Chimney and approved by Underwriters' Laboratories is 1 in. larger in both horizontal directions and has a new rain cap and shield design. The new top is available for either one or two flues. The Majestic Co., Inc., Huntington, Ind.

IGNITION TRANSFORMER

• A replacement-type ignition transformer has a choice of three heavy-duty base plates which adapt it to most types of domestic oil burners without further modification. Designed for continuous or intermittent domestic duty on 60-cycle circuits, the new transformer is rated at 100–120 volts primary, 10,000 volts secondary, 0.250 kva, with a secondary short-circuit current of 23 ma. General Electric, Scheneclady 5, N. Y.

(Continued on page 290)

Sweet's Architectural File.

Pittco EXTRUDED MOULDINGS

there is almost no end to the attractive patterns you can create from the wide variety of extruded and rolled mouldings in the Pittco" Store Front Metal line. Profiles have been designed to obtain a high degree of architectural symmetry. You can combine these mouldings into many pleasing patterns, a few of which are illustrated here. See your Pittco representative, or Store Front Detail Book for more detailed information.





PAINTS . GLASS . CHEMICALS . BRUSHES . PLASTICS . FIBER GLASS

PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

MAIL THIS
COUPON
FOR YOUR
NEW
GUIDE TO
MODERN
ENTRANCE
PLANNING





New Revolving Door Entrance at George Wienhoeber, Florist, Chicago.
Walter H. Sobel & J. Steward Stein: Architects

HOW TO KEEP

flowers AND Customers!

CONSTANT TEMPERATURE CONTROL—to keep costly cut flowers at their fresh and salable best—was greatly furthered by the change of entrance to the fine Chicago florist shop shown above. Drafts and dust no longer sweep in from windy Wabash Avenue. Outside cold or heat no longer rushes through, while customers struggle with stubborn swing doors. Not with revolving doors that are "always open" yet "always closed"!

These same advantages make a revolving door entrance a moneymaking investment for any retail establishment. Today's shoppers expect store-wide comfort and convenience. They keep coming back to the store that's smartly modern outside . . . always refreshingly clean inside . . . in every way a pleasant, draft-free place to do business every day of the year.

When planning a retail shop or store — however large or small—you can help your client meet all these expectations by specifying a revolving door entrance. What's more, you'll help trim store operating costs as well as build traffic. Mail coupon for complete data on these doors that pay for themselves many times over.



REVOLVING DOOR ENTRANCE DIVISION 2002 EDGAR STREET

EVANSVILLE 7, INDIANA

INTERNATIONAL STEEL COMPANY

A PRODUCTS

(Continued from page 288)

MOTOR CONTROL CENTER

• A compact motor control center will take nine NEMA Size One starter units or six NEMA Size Two units of either the fusible or circuit breaker types in the standard 90-in. trough without reduction in pull-box space. A new center bussing arrangement frees pull-box space for wiring and increases vertical bus capacity from 300- to 600-amp capacity in standard construction up through five sections. Each standard section of the G-E Motor Control Center DA7093 is 13½ in. deep by 24 in. wide. General Electric, Plainville, Conn.

ILLUMINATED LIGHT SWITCH



• An illuminated mercury light switch has a small neon light in the handle which glows when the switch is in the off position, making it practical for such locations as bathrooms, bedrooms, long hallways, entranceways, nurseries, hospital rooms, hotel rooms and attic and basement stairways. General Electric Co., Construction Materials Div., Bridgeport 2, Conn.

RECESSED LIGHT



• Four-foot-square recessed light cells have translucent white Plexiglas diffusing panels to produce high-intensity, low-brightness illumination for large commercial areas. The 3800 series, designed for four, six or eight fluorescent or slimline lamps, are finished in high-reflectance white enamel. The panels are supported in a full-length pianohinged steel frame for easy maintenance. Sunbeam Lighting Co., 777 East 14th Pl., Los Angeles 21, Calif.

Exclusive channeling guards against blistering and separation of felt and insulation



YOU PROVIDE an extra margin of safety against roof damage due to the formation of high-pressure air concentrations, when you specify Celotex Channel-Seal Roof Insulation. Its built-in "safety release" equalizes the pressure of air trapped in the roof, gives protection no ordinary roof insulation can provide!

Each piece of Channel-Seal has bevels %6" high by 1%6" wide on all bottom edges. When units are laid on the deck, these bevels form a network of broad, interconnecting channels extending over the entire roof.

How "Safety Release" Works

As higher pressures build up in some areas of the roof due to rising surface temperatures, they are relieved by air movement through the channels. Thus, pressure is reduced and equalized—the risk of blistering or separation of felt and insulation is minimized.

Made of a special board of unusually high insulating efficiency, Celotex Channel-Seal Roof Insulation is available in a range of thicknesses to meet the specific insulation requirements of each job. It is asphalt-coated on both sides and all edges, for extra moisture protection in storage and on the job.

Low Cost, Quickly Applied

Low in both initial and applied cost, Celotex Channel-Seal is remarkably rigid and tough, yet light and easy to handle. Resists damage from job handling. Smooth surface assures positive bond to both roof deck and roofing felt. Here you see why high-pressure air pockets won't build up with Celotex Channel-Seal Roof Insulation. Pressures due to temperature differences are equalized by movement of air through the channels. This channeling principle of roof protection has been proved effective by many years of actual use on jobs of every type and size.

What's more, it is the only roof insulation made of durable, interlocking, long Louisiana cane fibres—and protected by the patented Ferox® process from dry rot and termites. Write now for full data on Channel-Seal and other types of jobproved Celotex Roof Insulation for every need. The Celotex Corporation, Dept. AR-114, 120 S. LaSalle Street, Chicago 3, Illinois.

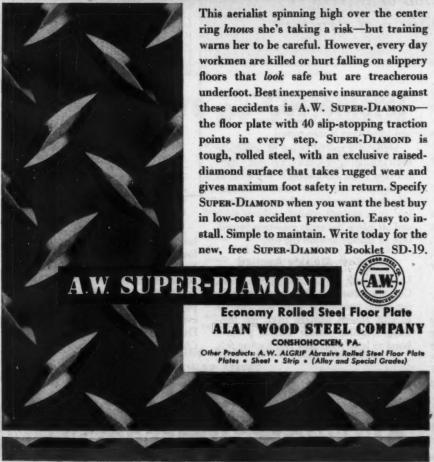
For a better roof... specify genuine

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THE CELOTEX CORPORATION, 120 SOUTH LA SALLE STREET . CHICAGO 3, ILLINOIS

Safer than Slippery Flooring





A LITERATURE

(Continued from page 228)

ALUMINUM

- A brochure on high-strength, drawn aluminum furniture tubes and a 36-page illustrated study of aluminum extrusions are available from *Harvey Aluminum*, 19200 So. Western Ave., Torrance, Calif.
- A 24-page, illustrated catalog listing all its aluminum products has been published by Quaker State Metals Co., Manheim Pike at Rt. 230 Bypass, Lancaster, Pa.
- The Aluminum Data Book, 1954 Edition, presents 220 illustrated pages of detailed data on the properties and characteristics of aluminum. Reynolds Metals Co., 2500 So. Third St., Louisville 1, Ky.*
- The latest developments in the science of welding aluminum are described in Welding Alcoa Aluminum. Fourteen chapters discuss aluminum welding methods, performance of aluminum welds, quality control and safety. Important data are presented in 32 comprehensive tables at the end of the book. 176 pp, illus. Aluminum Company of America, 733 Alcoa Building, Pittsburgh 19, Pa.*

FLOORING

- A booklet which describes vinyl floorings now being made by many of the leading flooring manufacturers is available from Bakelite Co., 30 East 42nd St., New York 17, N. Y.
- Floors and Walls is the 20-page Summer Supplement to the 1954 Gold Seal Pattern Book. Congoleum-Nairn Inc., Kearny, N. J.*
- Tile-Tex Floor and Wall Tile Digest presents a comprehensive coverage of Tile-Tex products. 34 pp, illus. The Flintkole Co., Tile-Tex Div., 1232 Mc-Kinley Ave., Chicago Heights, Ill.*
- A new full-color catalog for KenRubber flooring tile (8 pp) has just been issued by Kentile, Inc., 58 Second Are., Brooklyn 15, N. Y.*

SCAFFOLDING

• A 12-page illustrated bulletin covering the Brainard scaffolding system using a tubular steel frame has been released by Brainard Steel Div., Griswold St., Warren, Ohio.*

(Continued on page 294)



Architect Edward Stone of New York has tastefully combined Gate City units with picture windows in this modern dwelling.

Smart, Modern Design includes Gate City Awning Windows

The horizontal styling of these smart functional awning windows compliment your design and contribute to your client's year 'round living enjoyment.

They provide the home owner with more worthwhile advantages than any other window type... advantages he can only enjoy with Gate City Awning Windows.

100% ventilation control, real rain protection, easy operation, complete factory weatherstripping, dual action hardware and a choice of two superb window units, wood or aluminum.

Gate City has established a new standard for Aluminum Awning
Windows with: * Self-Adjusting Sash * Extruded Aluminum Strip Glazing
*Completely Enclosed Hardware * Lasting Permanized Finish



Truly versatile, Gate City
Awning Windows may be used with
picture windows, fixed side lights
and window walls...offering
unlimited design possibilities.

Gate City Awning windows

Perma-treated for Long Life

"Window Craftsmen for over 40 years"

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GATE CITY SASH & DOOR CO., DEPT. AR	-11
DO Box 901 Fort Laudordalo Fla	

P.O. Box 901, Fort Lauderdale, Fla.

Gentlemen: I would like complete information on

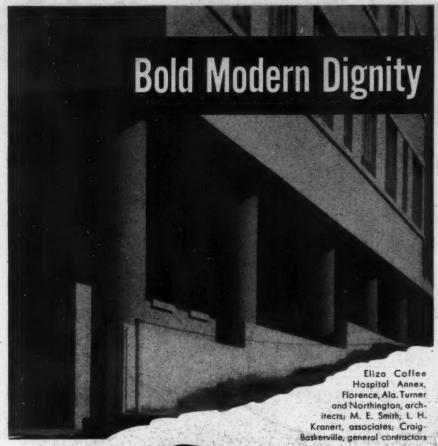
Gate City's Wood Awning Window

The New Gate City Alumiuum Awning Window

Name.

Address.

y_____State





FIBRE FORMS

for round columns of concrete

An air of striking stateliness has been achieved for the modern Eliza Coffee Hospital Annex through the use of round columns of concrete formed with low cost SONOTUBES.

For hospitals, churches, schools...in fact, for any kind of building... distinctive design can be economically achieved with round concrete columns formed by low cost SONOTUBE Fibre Forms. Forms are easily removed.

SONOTUBES save time, labor and money and are approved by architects and engineers everywhere. Widely used by contractors because these low cost SONOTUBES take less time to erect and fewer men to handle.

Available in 31 sizes, 1" to 36" I.D. up to 50' long. Can be supplied in desired lengths or cut to requirements on the job.

DENFORM reusable capital form designed for use with Sonotubes. Write for details.

See our catalog in Sweet's

For complete technical data and prices write





A 13 LITERATURE

(Continued from page 292)

KITCHENS

- A new specifications folder has been issued by Youngstown Kitchens for architects and home builders. 4 pp, illus. Mullins Mfg. Corp., Warren, Ohio.*
- Hospital Dietary Services is the third in a series of books by Clarence Schroeder, chief food service engineer for Hotpoint, and covers the food service requirements of small to medium-size hospitals. 70 pp, illus. (Commercial Equipment Dept.). Hotpoint has also produced a special file of counter and heavy-duty commercial electric cooking equipment for architects and kitchen consultants (Merchandising Dept., Form No. JN-500). Hotpoint Co., 227 So. Seeley Ave., Chicago 12, Ill.*
- Special Features of Current Gas Ranges is a chart of recent gas range developments currently being produced by 43 manufacturers. 10¢ for 1 to 9 copies. American Gas Association, 420 Lexington Ave., New York 17, N. Y.

FURNITURE

- Knoll Index of Contemporary Design presents the international collection of Knoll furniture and textiles. 64 pp, illus., \$5.00. Knoll Associates, Inc., 575 Madison Ave., New York 22, N. Y.
- A 1955 catalog of Raymor's complete line of contemporary home furnishings and accessories, 56 pp, illus., is available from Richards Morgenthau Co., 225 Fifth Ave., New York 1, N. Y.

HARDWARE

- A Carrier Guide for wall-hung fixtures manufactured by American Standard, Crane, Kohler, Eljer, Case and Richmond Radiator has been announced by Jay R. Smith Mfg. Co., 1119 Morris Ave., Union, N. J.
- Series "500" sliding door hardware for residential and light industrial usage is described in a 16-page illustrated catalog issued by Lawrence Bros., Inc., Sterling, Ill.*

ATOMIC ENERGY UNITS

• A source of reference on radiation and protection is available in a 56-page illustrated catalog from Bar-Ray Products, Inc., 209 25th St., Brooklyn 32, N. Y.* (Continued on page 296)

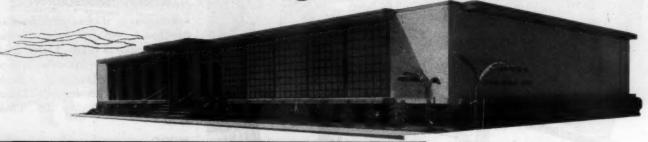
architects prefer



for the

nation's newest, most modern

medical buildings ...





The new 48-room Olmos Medical Center (San Antonio) is cooled by a central station, RK 25 h.p. The RK contains all elements of a built-up system—blower section, cooling section and evaporative condenser—in one cabinet. The evaporative condenser saves 95% on water consumption costs and eliminates the need for an outside water tower. Architect is Cerf Ross Associates; Engineer: Martin E. Staley; Contractor: G. H. Dillard Co., all of San Antonio, Texas.

N. Y.'s mammoth 500-bed Nathan B. Van Etten TB Hospital in the Bronx, recently completed, is one of America's largest medical buildings, and is another prominent usAlRco installation. usAlRco equipment includes 47 heating coils, 8 unit ventilators, 6 unit air conditioners and 44 blowers. Architects: Pomerance & Breines; General Contractor for the N.Y.C. Dept. of Public Works: Gerace & Castagna; Heating Contractor: Heating Maintenance Corp. of New York.

In today's finest, most up to date medical buildings, large or small, you see the UsAIRco name on air conditioning, heating and ventilating equipment again and again. Equipment that is designed to fit any requirement, unmatched in engineering excellence, equipment backed by 30 years of manufacturing experience... these are the reasons for today's trend to UsAIRCO. Typical examples of architects' preference for UsAIRCO products in America's outstanding medical structures are these two recent installations: N.Y.'s \$14,000,000 Nathan B. Van Etten TB Hospital, the Bronx, New York and the single story Olmos Medical Center, San Antonio, Texas.

For descriptive literature write Dept. R-114

UNITED STATES AIR CONDITIONING CORPORATION

MINNEAPOLIS 14, MINNESOTA . Export: 13 E. 40th Street, New York 16, N. Y., U. S. A.



SCHOOL DAYS ARE HERE FOREVER



The three "R"s always had a fourth when ordinary sinks were installed in schools . . . "replacement". This fourth "R" is gone forever when you specify ELKAY Lustertone, the sink that never leaves the schoolroom. And, these clean, sanitary sinks stay bright and lustrous for generations of students . . . provide perfect water protection with wide drainboards one-piece bonded to bowls without cracks or crevices. ELKAY Lustertone will be "teacher's pet" . . . forever.

> ELKAY Lustertone sinks and sink bowls are available with one or two bowls in a full range of standard sizes-are adaptable to almost any purpose with the use of various faucets including bubblers and goosenecks.Perfect for classrooms, kitchens, laboratories and domestic science rooms.

See Sweet's 23b or write for complete information



ELKAY MANUFACTURING COMPANY

1874 South 54th Ave., Chicago 50, Illinois

The World's Oldest and Largest Manufacturer of Stainless Steel Sinks . . . since 1920

LITERATURE

(Continued from page 294)

STEEL STUDS

· Milcor Steel Studs for Hollow Partitions includes detailed drawings, stepby-step installation instructions, suggested specifications and on-the-job photographs.

Milcor Steel Roof Deck includes a safe loading table, suggested architects' specifications, welding and insulation procedures, roof deck accessories, application details and the use of Milcor steel roof deck for floor forms. Inland Steel Products Co., 4035 W. Burnham St., Milwaukee 1, Wis.*

MERCHANDISING EQUIPMENT

· Spacemaster Visual Merchandising Equipment, with accompanying price list, presents 128 pages of store display equipment. Space-Klips shows how pegboards can be used for effective display. Both are illustrated. Reflector-Hardware Corp., 2235 So. Weslern Ave., Chicago 8, Ill.

WOOD

- Installing TECO Timber Connectors tells where and how to install five types of timber connectors used to increase the strength of joints. 12 pp, illus. Timber Engineering Co., 1319 18th St., N.W., Washington 6, D. C.
- · Wood Frames and Windows is the third in a series of brochures covering phases of architectural woodwork. 8 pp, illus. Architectural Woodwork Institute, 332 So. Michigan Ave., Chicago 4, Ill.
- Modern Magic is a 12-page illustrated booklet showing the use of decorative plywood in homes. Associated Plywood Mills, Inc., P. O Box 672, Eugene, Ore.*

AIR FILTER

• A new 4-page folder describing a new lifelong air filter has been issued by The George Evans Corp., Moline, Ill.

LITERATURE REQUESTED

George W. Stickle, Architect, Stickle Building, 2422 Prospect Ave., Cleveland 15, Ohio.

Reliable Engineering Corp., Architects and Engineers, 2605 Beale Ave., Altoona, Pa.

Rodolfo Hasse, Architect, Monroe 4760, Buenos Aires, Argentina.

Nestor Balbiani, Architect, General Roca 1783, Vicente Lopez, Pciá, de Buenos Aires, Argentina.

Per E. Rundberg, Architectural Designer, 390 Hibiscus Way, Terra Linda, San Rafael, Calif.

in schools everywhere



GLYNN•JOHNSON Door Control Hardware

designed to absorb shock and noise

By offering a cushioned stop for violent door openings...GJ devices greatly reduce wear, distortion, and damage to walls, reveals, jambs, hinges, door closers, and other hardware, eliminating excessive repair and maintenance bills. By holding the door open at dismissal time the unnecessary wear and abuse of continuous openings and closings are avoided.

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Overhead Type Door Holders,
Stops, and Shock Absorbers for
ENTRANCE and CLASSROOM DOORS
opening up to 110°







Floor and Wall Type
Door Holders and Bumpers for
ENTRANCE and CLASSROOM DOORS
opening beyond 110°





Noise quieting Door Silencers and Mutes



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THE RECORD REPORTS

(Continued from page 12)

present nine schemes for building location on site in respect to street arrangement but state clearly that these are preferred, not mandatory. Architectural treatment of exteriors is being left to the discrimination of the proponent and his architect. Interior finishes, however, must conform to the standards set out in the specifications.

In practice, the Post Office field offices will trace off the schematic drawings applicable to the local situation and provide them to each proponent, who also will receive a copy of the specifications. It is proposed that the specifications will then remain a permanent part of the proponent's files.

Most Postal Space Affected

The great bulk of mail handling is done in rented quarters. Of some 25,000 post office spaces, approximately 3000 are Federally owned. Since the first of this year, the Post Office Department has leased new buildings whose construction costs exceed \$40 million. About 2000 lease and rental cases are under consideration at any one time.

The specification foreword states in part: "The Department, after careful study, has prepared the attached plans and specifications in recognition of the need for standardizing the arrangement of postal facilities and establishing construction standards for nationwide use. It is believed that these plans and specifications will serve as instruments to expedite negotiations for construction of new postal facilities, assist proponents in the preparation of proposals, and facilitate the preparation of contract drawings by architects."

No Forced Remodeling

The new approach is not intended to cause the unnecessary remodeling of existing serviceable buildings and equipment considered for lease. But insofar as practicable, whenever it is necessary to alter existing structures for service or other reasons, the work will be accomplished according to applicable portions of the new specifications.

Future Revisions as Needed

The specifications are signed by Ormade A. Kieb, Assistant Postmaster (Continued on page 300)



against water damage. That means using Medusa Waterproofed Cements (or Waterproofing Paste or Powder when waterproofed cements are not available) in all concrete and mortar. These Waterproofings bring economy and satisfaction for the architect and builder, alike.

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ADEQUATE DRAFT AT ALL TIMES

THE RECORD REPORTS

(Continued from page 298)

General, Bureau of Facilities. The drawings carry the signature of Mr. Kieb and R. D. Barnard, director, Division of Real Estate. The chief of the design and engineering section, the chief inspector, and officials of the Bureaus of Finance and Post Office Operation also gave approval to the plans.

While they are believed to cover adequately the Department's design needs for the present, the plans and specifications will be revised as new requirements occur.

Await Lease-Purchase Moves

Post Office officials emphasized that the new standard layouts have no direct bearing on construction to be performed under the lease-purchase program. They apply, rather, to the much greater volume of building done by private owners for lease to the government, and cover only those new buildings and the remodeling of older structures where ownership remains in private hands. Under the new lease-purchase law, buildings will come into Federal government ownership upon amortization of the investment.

The Post Office Department and the General Services Administration currently are conferring on methods of administering the lease-purchase program. At this writing final details as to preparation of plans for post offices to be constructed under this new statute had not been worked out. It was known, however, that the Post Office favors a scheme whereby private architects will do the designing, at least on the larger structures.

Meanwhile, the Department is anxious to make a firm start on its leasepurchase activities. Last month this awaited approval of specific projects by the Senate Public Works committee, and formal okay by the Bureau of the Budget. Consideration of the full list of Post Office and General Services Administration projects by the Senate group when the Senate returned briefly in November was considered a possibility. Post Office spokesmen gave the impression, however, that much detail remained to be worked out concerning the package offer plan that they intend to present under the lease-purchase scheme. But once the projects are approved, they will move rapidly toward final planning and construction.



A WAYLITE SURFACE

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In addition, it has high thermal insulative qualities ... offers many decorative possibilities ... it is low in cost ... fire-safe

A large number of schools are being built these days of Waylite concrete masonry units.

The fact that the exposed surface of Waylite is one of the most efficient acoustical treatments known is in part responsible. Rooms that are comfortable to the ear are equally important in churches, auditoriums, offices, and many other structures.

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Waylite concrete masonry units are structurally adequate and give a combination of four important factors: (1) high thermal insulative qualities; (2) excellent acoustical values;

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You will find 24 pages of engineering data on Waylite in Sweet's Catalog. Additional information is available on request. Address the Waylite Company, 20 North Wacker Drive, Chicago, Illinois or Box 30, Bethlehem, Pennsylvania.







THE RECORD REPORTS

WASHINGTON

(Continued from page 38)

rate of school construction must be nearly tripled to keep pace with the increasing student load — this in spite of the fact that the current rate is breaking all records.

There was no disagreement as to requirements, but Commissioner Brownell said a new analysis of the situation is needed and the conferences are intended to provide it.

"The solution of the problem," he declared, "is dependent upon continuance of large-scale school construction for at least 10 years, including action in individual school districts and states, regardless of what action is taken in Washington." Commissioner Brownell also said there is evidence that all states have the resources and authorization to spend more money for school building purposes than they actually do. Recent Federal tax laws have provided states with a greater margin of tax capacity than heretofore.

The Kearns subcommittee also heard more than a dozen state school officials, all of whom recommended Federal aid for financing school construction.

READY DESIGN CRITERIA ON NEW MILITARY HOUSING

Design requirements and other criteria for the \$175 million permanent military housing program authorized by the last session of Congress are being prepared by the Department of Defense with the Washington, D. C., architectural firm of Keyes, Smith, Satterlee and Lethbridge as consultants.

The Department says design requirements and schematic drawings will be worked up primarily for the larger projects "that must be tailored to sites"; otherwise the construction agency involved in actual building can negotiate with a private firm for design work to be reviewed by the Department. Present plans call for the Department to supply guidance only.

Of the \$75 million actually appropriated to start the new program, the three services have received allotments as follows: Air Force, \$37,500,000; Army, \$26,250,000; Navy, \$11,250,000.

Congress tied strong strings to the appropriation: it said that before any (Continued on page 304)

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THE RECORD REPORTS

WASHINGTON

(Continued from page 302)

such permanent military housing could be built, the Secretary of Defense must, certify that it is impractical to build Wherry Act housing; that adequate rental housing is not available in the immediate vicinity of the military installation concerned; and that the needed housing cannot be acquired under any other provision of the law.

Of the restrictions, Defense officials regard the Wherry Act proviso as the most troublesome: it has been suggested that the only way to document the "impractability" of Wherry housing in a given situation is to program it and carry it through to the bid-asking stage; if none were received, this would provide the "documentation."

The total authorization of \$175 million is intended ultimately to provide 11,967 units of military housing, most of it in one-to-four bedroom houses for enlisted men and company-grade officers. An upper cost limit of \$20,000 per unit was set in the legislation.

ALLOCATE AIRPORT FUNDS: NO AID FOR TERMINALS

Land acquisition, construction and improvement of runways, lighting and other ground improvements constitute the bulk of the projects among 164 listed by the Civil Aeronautics Administration to receive the \$20,425,843 in Federal funds allowed for fiscal 1955 for the Federal-aid-to-airport-construction program. No new terminal buildings are included.

Allocation of funds set in motion the largest Federal-aid airport program since 1951. Last year's allocation was only \$11 million. The new assignment of funds means that over \$40 million will be expended, since states and local communities must match the Federal money dollar for dollar.

Commerce Secretary Sinclair Weeks, in making the announcement, said the program would benefit all segments of aviation and make employment for industries supplying construction materials and those engaged in building and improvement of airports throughout the country.

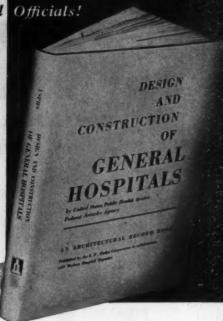
Of the \$22 million appropriated by Congress for the program this year, \$15 (Continued on page 306) Enthusiastic Praise from Architects, Physicians, and Hospital Officials!

DESIGN and CONSTRUCTION OF GENERAL HOSPITALS

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214 pages

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which are today serving as blueprints for truly modern general hospitals. Enlisted in this research project were the skills and experience of experts in the fields of architecture, engineering, medicine, hospital administration, nursing, and dietetics. As a result, this book provides to all who plan and build hospitals the same high quality of technical and consultative assistance that the Public Health Service renders in all of its programs to build the nation's health. The material, collected and organized by the editorial staffs of two outstanding professional journals - THE MODERN HOSPITAL and ARCHITECTURAL RECORD—makes by far the most authoritative volume on this all-important subject in print today.

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"Hospital authorities and their professional associates have, in fact, been waiting many years for such a book. The composite author groups have packed a great deal into 214 pages and have given us as much of perfection as we can expect in such a fluid area of planning as hospital construction... none of the principles or practices which are recorded here may be considered as final, but they are unexcelled as guides to careful planning..."

E. M. Bluestone, M. D., American Journal of Public Health

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"Recognition is due Marshall Shaffer and others for the excellence of the work, for its rational approach to hospital planning and construction, and the logical arrangement of subject matter, the completeness and comprehension of each step... where other works describe mainly the principles basic to hospital planning and construction, this one translates the principles into schematic drawings and illustrates how they can be carried out in hospitals as small as eight beds (nursing units or community clinics) and as large as 200 beds. Even more it provides detailed equipment lists and recent tost figures..."

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ference and guide"

Although the perfect hospital has never been constructed and prob-bly never will be, the use of this volume as a reference and guide will prevent many of the errors that show up after completion..."

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ractical handbook"

contains an invaluable collection of data and material on the ject of hospitals, and constitutes a practical handbook from which are planning may be based..."

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Orientation & Exposure

Topography Landscaping

Topography
Landscaping
B. The Building
General Considerations
Traffic: Exterior
Traffic: Interior
C. Circulation Space
Corridors
Stairways
Elevators

III. ELEMENTS OF THE GENERAL HOSPITAL

A. Main Lobby
Information & Switchboard
Admitting Office
Business Office
Administrator's Office
Medical Service Office
Director of Nurses' Office
Medical Record Room
Library & Conference Room
Staff Lounge & Locker Room

Gift Shop
Personal Toilets
B. Nursing Facilities
Patient Areas
Two-bed Rooms
Four-bed Rooms
Isolation Units
Psychiatric Room Psychiatric Room Treatment Room Nurses' Station Consultation Room

Nurses' Station
Consultation Room
Utility Room
Floor Pantry
C. Surgical Facilities
Operating Rooms
Sub-sterling Rooms
Scrub-up Facilities
Clean-up Room
Anesthesia Equipment Room
Cystoscopic Room
Fracture Room (Orthopedic)
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St. Joseph's Catholic High School, recently completed in South Bend, Indiana, embodies modern concepts in school design, construction and equipment. WEISART Compartments are used in both the boys' and girls' toilet rooms. (Boys' room illustrated above.) Architects, Gaul and Voosen, Chicago.

Particularly in schools, where appearance, sanitation and ability to stand hard usage are vital, Weisart Compartments are the logical

choice. They have triple protection of (1) flush steel construction with edges locked and sealed, galvanized surface "smooth as glass" (2) Bonderized for additional corrosion resistance and positive adhesion of enamel (3) synthetic primer and enamel separately baked combining a highly protective surface with lustrous beauty in your choice of 24 colors.

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THE RECORD REPORTS

WASHINGTON

(Continued from page 304)

million was required by law to be apportioned among the states according to the area-population formula set out in the Federal-aid airport law. Another \$5 million constituted a discretionary fund for use where high-priority needs could not be met out of the state apportionments. The balance of \$750,000 was for projects in Alaska, Hawaii, Puerto Rico and the Virgin Islands. A sum of \$1,-250,000 was set aside for administrative purposes. There also was \$1.5 million carried over from a previous fiscal year.

Calendar 1954 has seen a dip in the program. Activity has been confined to completion of previously authorized projects. Meanwhile, the Department of Commerce has been studying the entire program to determine the role of the Federal government in it.

NEW NAVY MATERIAL MAY AID BUILDING PRODUCTS

Navy's Bureau of Ordnance is developing a new structural material for bonding fiberglass which it believes holds great promise for construction industry

As yet unnamed, the material is said to produce laminates and tubular products of superior strength, of high resistance to the usual corrosive agents, and more suitable for use in higher temperatures.

John S. Nachtman, inventor of the material and supervisor of materials in the Bureau, has predicted that it can be used in roofing, flooring, panels, beams and molding. Researchers are confident of its superior strength, but another year of experimentation is needed to determine its cost in comparison with better known building materials.

Instead of employing the conventional method of bonding fiberglass with resins and organic materials, the new process combines metals and inorganic substances. The coated fibers are bonded and compacted to form the end products.

INDUSTRY ADVICE SOUGHT AS HHFA DIVISIONS MOVE

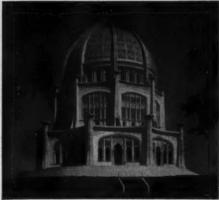
Last month's housing news was studded with reports of industry ad(Continued on page 308)



First Baptist Church, Long Beach Cal. K.S. Wing, architect.



Bradford Church Monastery, Bradford, Vt. William Colleary, architect.



Bahai Temple, Wilmette, Ill. Louis Bourgois, architect.

rchitectural Concrete is ideal for churches of any design These photos illustrate the versatility of architectural concrete

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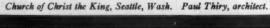


Cathedral of the Holy Spirit, Bismark, N. D. W. F. Kurke, architect.

PORTLAND CEMENT ASSOCIATION

Dept. 11-8, 33 West Grand Avenue, Chicago 10, Illinois

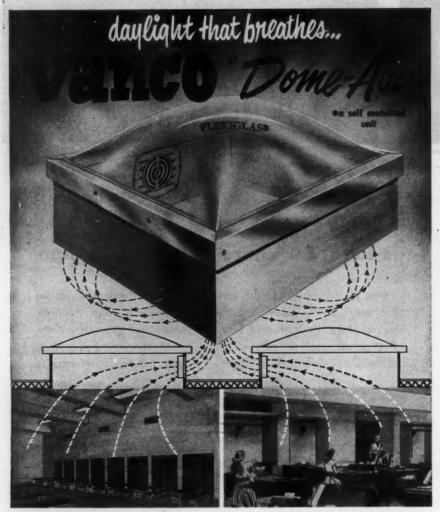
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Holy Blossom Synagogue, Toronto, Canada. Chapman & Oxley, architects.





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Write for complete specs — or bring us your design problems.



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THE RECORD REPORTS

WASHINGTON

(Continued from page 306)

visory committees named and consulted by various divisions of the Housing and Home Finance Agency as they continued the process of implementing the new housing law with administrative rules and regulations.

Wanted: "Structural Quality"

A new 14-member advisory committee on architectural and technical standards was appointed by Commissioner Norman P. Mason of the Federal Housing Administration and held its first meeting October 7.

"This committee," said Commissioner Mason, "will help us launch a study that will lead to new FHA methods and techniques to permit us to give proper recognition to quality over and above our minimum requirements." In recent speeches, Commissioner Mason has been stressing "the new emphasis we are placing on structural quality, employing a studied and uniform system of appraisal and inspection. . . . Each of us," he told the annual meeting of the Mortgage Bankers Association of America, "has a big stake in seeing to it that we have quality construction and good design.'

Walter A. Taylor, director of education and research for the American Institute of Architects, and Morgan Yost, A.I.A., of Kenilworth, Illa are architect members of the advisory committee. Other members: Harry H. Steidle, manager, Prefabricated Home Manufacturers Institute; William B. F. Hall, General Industries, Inc., Fort Wayne, Ind., P.H.M.I. member; Douglas Whitlock, chairman of the Board, Structural Clay Products Institute; Harry C. Plummer, S.C.P.I. engineering director; Dr. Clifford F. Rassweiler, chairman, Division of Engineering and Industrial Research. National Research Council; John L. Haynes, managing director, Producers' Council; William Gillett, president, Producers' Council; Leonard G. Haeger, director of research, National Association of Home Builders: Earl W. Smith. N.A.H.B., El Cerrito, Cal.; William H. Scheick, executive director, Building Research Advisory Board; C. W. Smith, Southwest Research Institute, San Antonio; and Howard J. Uebelhack, vice president, National Plan Service, Chi-

(Continued on page 310)

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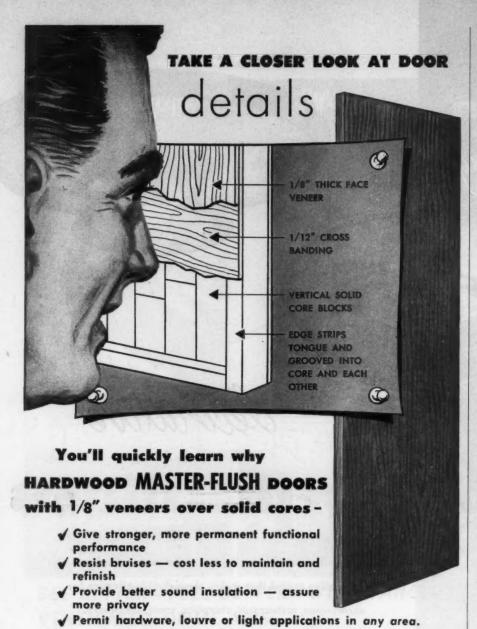
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THE RECORD REPORTS

WASHINGTON

(Continued from page 308)

cago, representing the National Retail Lumber Dealers Association.

Urban Renewal Panel Meets

The 21-member advisory committee to HHFA's Division of Slum Clearance and Urban Redevelopment was to hold its second meeting on October 29. The committee, appointed in September by HHFA Administrator Albert M. Cole to advise on the new urban renewal program and headed by Division Director James W. Follin, met for the first time September 9. Discussion centered on requirements and procedures for communities interested in developing an urban renewal program.

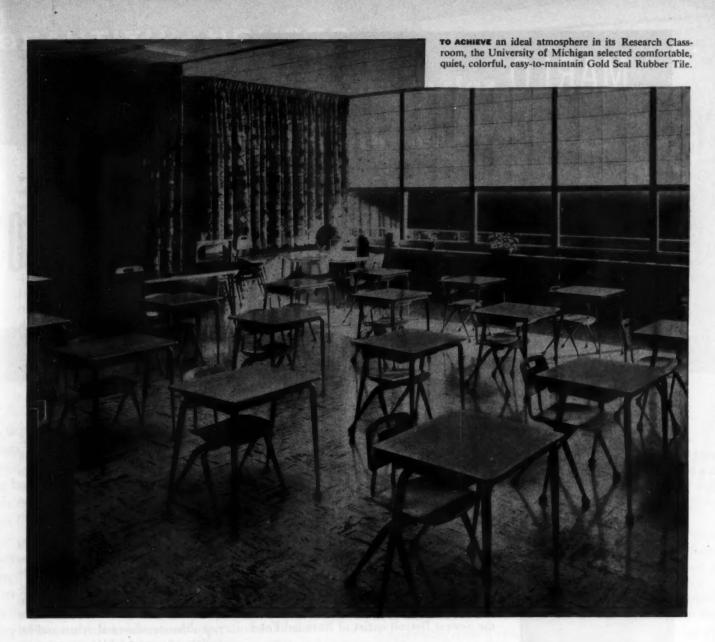
Edmund R. Purves, executive director of the American Institute of Architects, represents the architectural profession on the panel. Other members: Randy Hamilton, American Municipal Association; John Dickerman, National Association of Home Builders; William L. Slayton, National Association of Housing and Redevelopment Officials; Charles T. Stewart, National Association of Real Estate Boards; Lee Johnson, National Housing Conference; Reginald A. Johnson, National Urban League; John L. Haynes, Producers' Council; F. Stuart Fitzpatrick, U. S. Chamber of Commerce; Paul V. Betters, U. S. Conference of Mayors; Dennis O'Harrow, American Society of Planning Officials; Donald Herrick, American Public Works Association.

Also Harold P. Braman, National Savings and Loan League; Stephen Slipher, U. S. Savings and Loan League; Bert Seidman, American Federation of Labor; Samuel E. Neel, Mortgage Bankers Association of America; Clarence Mitchell, National Association for the Advancement of Colored People; H. R. Northrup, National Retail Lumber Dealers Association; Ben Fischer, C.I.O. Housing Committee; Col. William G. Wharten, American Society of Building Officials; Morris Miller, Committee on Housing, Municipal Law Section, American Bar Association.

Watchdogs for Title I

The FHA program of home modernization and repair (Title/I) has a new seven-man advisory committee dedi-

(Continued on page 312)



Specify GOLD SEAL RUBBER TILE

for a prestige floor with clearer, smarter colors!

Resilient! Gold Seal Rubber Tile is luxuriously quiet and comfortable under foot . . . cuts fatigue problems in schools, hospitals, homes . . . does a better job of resisting indentation from heavy office furniture.

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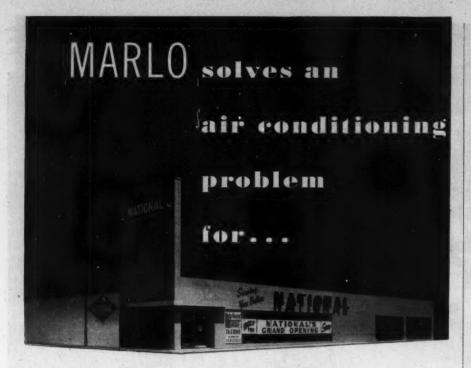
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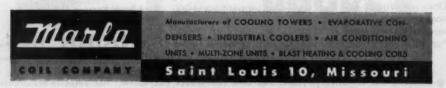
In modern supermarket operation, every square foot of space must count.

That's why Marlo's Ceiling Type Air Handling Units were such a "natural" for the newest Detroit outlet of National Food Stores. Suspended from the ceiling, these compact Marlo units release badly needed floor space for storage or other uses.

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If you have an air conditioning problem, you'll find the solution in the complete line of Marlo quality equipment.

See our bulletin in SWEET'S CATALOG



THE RECORD REPORTS

WASHINGTON

(Continued from page 310)

cated to safeguarding and expanding the program.

Members, who meet with the new Title I director, Cyrus B. Sweet, former president of the National Retail Lumber Dealers Association, are: Allen R. Cobb, Irving Trust Company, New York; Fred W. Heitman, Jr., Northwest National Bank of Chicago; George P. Spiczak, Home Federal Savings and Loan Association, Chicago; R. T. Mayfield, First National Bank of Fort Worth; G. Merritt Robbins, First Bancredit Corp., St. Paul; D. Z. Albright, Security-First National Bank, Los Angeles; W. L. Johnson, Construction Finance Company, Boise, Idaho; and Joseph Wood, Johns-Manville Corp., Chicago.

"Workable Program" Defined

The most important news on the urban renewal front came from the office of Administrator Cole in the form of an 11-page circular "How Localities Can Develop a Workable Program for Urban Renewal (The Prerequisites For Certain Federal Aids)."

The new housing law provides that a community must present to the Administrator for his approval a "workable program" to eliminate slums and prevent their future development before it can qualify for Federal loans and grants for new slum clearance and urban renewal projects; for special FHA mortgage insurance to renew deteriorating neighborhoods and provide low-cost housing for displaced families; and for low-rent public housing.

Seven "essential objectives" of a "workable program" are listed and explained in the circular. As summarized by HHFA they are:

1. Codes and ordinances. The community must have in effect or commit itself to the adoption of a comprehensive system of codes and ordinances which prescribe adequate minimum standards of health, sanitation and safety under which dwellings may be lawfully occupied.

2. A Comprehensire Plan for Community Development, including as a minimum a land-use plan, a thoroughfare plan, and a zoning ordinance; and a provision for current revisions to meet

(Continued on page 314)

BEAUTIFUL HOUSES 400

A Treasury of CONTEMPORARY HOUSES

by the editors of Architectural Record

Here, depicted in truly superb photographs and detailed frawings, are fifty houses that meet the most exacting lemands of quality architecture. Chosen for publication from mong hundreds of candidates, these houses are tributes of their creators and sources of genuine pride and delight of their owners. Most of them are illustrated in at least en fine photographs of interiors and exteriors, plus skilled frawings of floor plans, plot plans, and intriguing details of design. Explanatory text tells the story of each house, what its owners wanted, and how the architect met and olved the problems confronting him. Here indeed is a reasury of houses rich in ideas and inspiration from the planning boards of some of America's foremost architects and designers.

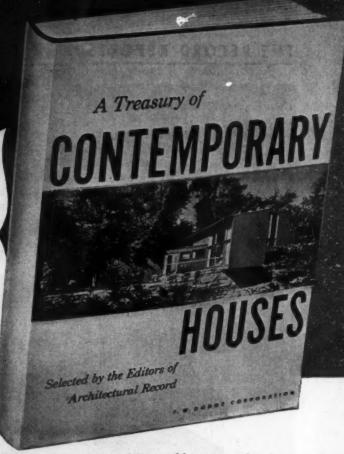
20 Pages • 8¾ x 115% • Over 600 Illustrations • \$5.95

To convey the spirit of this book we herewith reprint in its entirety he introduction written by Emerson Goble, managing editor of Architectural Record:

House design today is in a state of delightful confusion. Confusion because ideas seem to change so rapidly, or maybe because there are 0 many ideas, so many new things to work with. Delightful because we want our houses to be delightful. You might even say that delight s the current fashion.

"Our forefathers—unnumbered generations of them—might laugh t the idea of delight being a current fashion. The age-old summary of architecture speaks of 'commodity, firmness and delight.' But it is till true that architecture has newly discovered the word, or at least as new visions of its realization.

"It is important to realize that this represents a step forward, not ackward. When contemporary architecture, many years ago, began



sweeping out the sentimental litter of by-gone styles, it was going forward. It was recognizing that ancient styles, beautiful as they were in their day, were anachronisms in our time. They were merely stage settings. They did not satisfy our intellect, and if they satisfied our emotions, weren't we a little mixed up?

"So architects set about developing an architecture that would satisfy our sharpened intellects. They began developing new forms, new materials and techniques, new esthetics, new combinations of space, new ways to design houses for their purposes.

"What's new is not the negation of all that. It is rather the conscious effort to use it all for the delight of man's soul. It's as simple as that.

"A noteworthy result is variety. And what could be more delightful in house design than variety? Why should a modern house have to have a flat roof? Or a glass wall? Or an open kitchen? Why should it have to have its structure exposed? Why shouldn't it have anything its owners really want, including a curve or two, even a Victorian curve?

"Well, that's where modern architecture is today. That is why, incidentally, there is much variety in the houses in this book. All are modern. All were considered good enough to publish in ARCHITECTURAL RECORD. All are very recent selections. But not all take their academic theory in the same doses. What's more to the point, all have ideas in them, and nowadays there is no dogma, intellectual or otherwise, against using whatever ideas may appeal to you."

Dodge Books 119 West 40th Street, N	lew York 18, N. Y.
temporary Houses" at	ediately copy(s) of "A Treasury of Con- \$5,95 per copy. Unless I am completely satisfied the option of returning it within 10 days for a hase price.
enclosed find \$	please send bill
(Add 3% sales tax for	delivery in New York City)
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changing conditions and to serve future needs of the locality.

- 3. Neighborhood Analyses. To determine the causes and conditions of blight in neighborhood areas throughout the community, and to study the means of correction.
- 4. Administrative Organization. The community must have a firmly estab-

lished administrative responsibility and capacity for both effective enforcement of codes and ordinances and the carrying out of desired renewal projects.

- 5. Financial Capacity, to insure the community's ability to meet financial requirements under its urban renewal program, with respect to both current operating expenses and capital outlays.
- 6. Housing Displaced Families, to facilitate the rehousing of such displaced families in decent, safe and sanitary accommodations.
- 7. Full-fledged Citizen Participation, to begin at the time planning of the program is initiated and to include representatives of business, professional, labor, welfare, religious, educational and minority group interests in both the community as a whole and in slum and blighted areas.

The new requirements are not retroactive and therefore do not apply to commitments made under the old housing act.

MPRs for Low-Cost Homes

Minimum property requirements for low-cost homes financed under Section 203(i) of the new housing act are set forth in a 12-page booklet recently issued by FHA.

To be eligible for FHA's low-cost housing mortgage insurance, a dwelling must be a complete structure, with permanent partitions, providing at least two "livable" rooms and a bathroom, must be adequate for year-round occupancy, and must comply with established requirements for a single-family residence under standard FHA regulations. The same services and facilities are required; principal differences occur in allowance of greater latitude in lot area, room size and completeness of interior finish - to keep original costs down, the buyer may, after purchase, add landscaping, interior decorating and the finished floor. But FHA Commissioner Mason emphasized that a mortgage on a so-called "shell" house, consisting of four walls and a roof, is no longer insurable under this program.

Houses built to sell under the program must meet three requirements other than the need for housing. They are: suitability of location, appropriateness in regard to general community standards, and impracticability of financing under FHA's standard single-family house program.

New FHA Regulations

Safeguards against the kind of practice which produced the Federal Housing Administration "scandals" exposé earlier this year have been written into the new FHA regulations, according to Commissioner Norman P. Mason.

(Continued on page 316)



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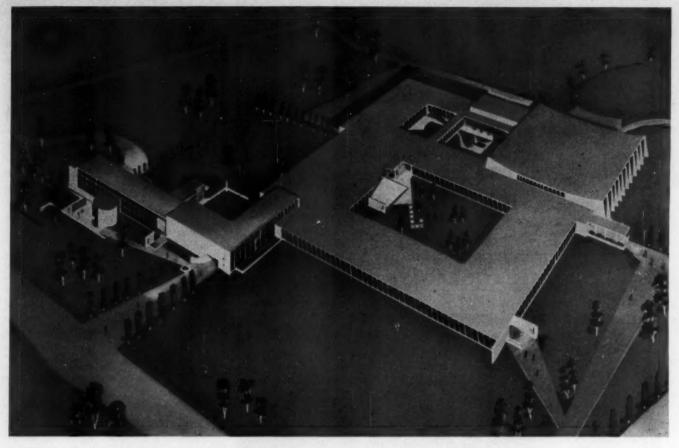
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General Contractors: J. W. Snyder, Chicago, Ill.



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panels, the sills and stools. Noteworthy is the fact that the panels will be filled after installation with a sprayed-on blanket of asbestos insulation. Inside, the louvered hot air vent covers are of **SEAPORCEL** porcelain, too!

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In issuing the regulations on Section 207, the rental housing part of the act, Mr. Mason stressed that the rules had been tightened up sufficiently to prevent the mortgaging out on these projects and the accumulation of windfalls such as those aired in the government's own investigation of FHA and the Senate Banking Committee probe.

Under the new regulations, mortgages in most instances cover 80 per cent of the estimated value of the project. As an incentive to low-cost housing construction, this ratio is permitted to rise to 90 per cent of the value, if the property averages two bedrooms per unit or more.

A mortgagor's certificate of actual

cost now must be submitted to the agency when the property's physical improvements are completed. This must be to the satisfaction of the Commissioner and occur before final endorsement of the loan insurance.

These certificates must list the cost to the mortgagor of the architect's fees, off-site public utilities and streets not included in the general contract. The form also calls for an indication of the cost of organizational and legal work as well as some other items of expense. When the work is finished, the certificate must set out all these costs plus a builder's fee.

In addition, mortgagors are required to submit to FHA a certification of all actual costs paid for labor, materials and subcontract work under the general contract exclusive of the builder's fee and less any kickbacks, rebates, trade discounts and similar payments to the builder or mortgagor corporation.

Commissioner Mason said his new regulations would require the owners of rental housing projects to have "substantial investments" in them.

Another safeguard appearing in the new rules is the requirement that mort-gage amounts be reduced if the FHA estimates of value prove to have been too high. It reads: "If the principal obligation of the mortgage exceeds the applicable statutory percentage of this total amount, the mortgage shall be reduced by the amount of such excess prior to final endorsement for insurance."

A limitation of \$5 million on any principal obligation involved in these rental projects continues in force. The per room limitation is set at \$2000, and the per family unit ceiling at \$7200. In case of elevator types, however, the Commissioner can approve increases to \$2400 and \$7500 respectively to cover added cost.

Where the mortgagor is a Federal, state, or municipal corporate group, or a limited dividend or redevelopment corporation formed under and restricted by Federal or state statutes or regulations as to rents, etc., the limit on any principal obligation can go up to \$50 million.

The new regulations specifically forbid use of 207's for hotel purposes. This results from objections voiced by hotel and motel men before Congressional committees; protests that the conversion of FHA-insured rental housing to these

(Continued on page 318)

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HARLES W. CONNELLY A LA ARCHITECT

THE RECORD REPORTS

WASHINGTON (Cont. from p. 316)

purposes was hurting their business.

The first of the new FHA rules came in record time—just a week after President Eisenhower signed the new 1954 housing measure. Also with built-in safeguards, these guides for sales housing were designed to carry out the Administration's program to enable more American families to live in better homes, the FHA chief said. He considered the

chief new privilege to be the lower down payment requirement.

The new loan-to-value ratio permits an insured mortgage in the amount of 95 per cent of appraised value up to \$9000 plus 75 per cent of the value in excess of \$9000, up to a total mortage value of \$20,000. Repayment terms are boosted to 30 years, bringing lower monthly payments.

The regulations also establish ceilings on fees the lender may charge the buyer of both new and existing houses. In the case of the open-end advance, the lender can charge \$25 or one per cent of the loan, whichever is lesser, plus customary costs and fees which the lender may recover.

The seller or builder is required to deliver to buyer, prior to sale, a written statement setting forth the FHA's appraised value of the property. This provision in the law worried builders very much until FHA devised a plan to aid those making sales before an FHA appraisal can be obtained. Applications based on existing sales contracts or contracts to be executed can be processed if they contain a specific amendment. Mortages insured and commitments issued before August 2, effective date of the act, are not affected.

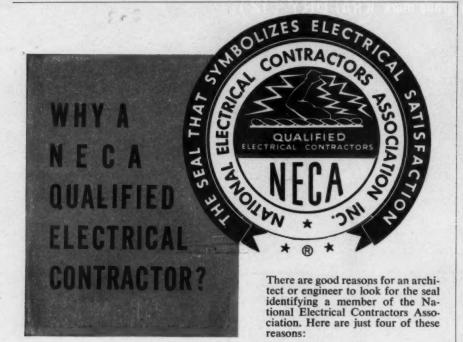
The contract amendment specified by FHA:

"It is expressly agreed that, notwithstanding any other provision of this contract of sale, the purchaser shall not be obligated to complete the purchase of the property described herein with a mortgage loan to be insured by the FHA or to incur any penalty by forfeiture of earnest money deposits or otherwise as a result of the exercise of his rights under this provision, if, within seven days after the seller delivers to the purchaser a written statement setting forth the appraised value of the property as determined by the FHA Commissioner (which statement the seller hereby agrees to deliver to the purchaser promptly after such appraised value determination is made available to the seller), the purchaser notifies the seller in writing that he does not desire to complete the purchase of the said property with a mortgage loan to be insured by the FHA."

This means that the sale can be closed without the FHA appraisal contingent upon the buyer's privilege of withdrawing if he wants to after he sees the FHA appraisal figure.

Builders and sellers of new homes now also must deliver to the buyer a builder's warranty that the dwelling was constructed in substantial conformity with the plans and specifications on which the FHA valuation was based.

Section 213 — the new FHA rules governing cooperative housing try to close the loopholes that have permitted so many abuses under this program in recent years. The builder, or other mortgagor of such construction, now must certify as to actual cost when each man(Continued on page 320)



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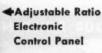
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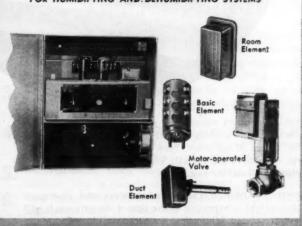
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THE RECORD REPORTS

WASHINGTON (Cont. from p. 318)

agement-type cooperative project is completed. A similar regulation has been placed in effect for rental housing projects built with FHA insurance assistance. In the case of co-ops, the mortgage amount will be calculated on the basis of 90 per cent of the estimated value of the project, or 95 per cent if there is 65 per cent (or more) veteran participation. When the job is completed, the mortgage amount will be adjusted if necessary so that it will not exceed 90 per cent (or 95 per cent) of the actual certified cost.

Individual and row-type homes, under the sales project program, continue to be eligible for government-insured financing on a cooperative basis, with the added provision that the purchasers will now receive an FHA appraisal of value and a builder's warranty that the property was constructed in substantial conformity with FHA-approved plans and specifications.

The increased mortgage amounts and the liberal mortgage terms of 40 years on a level annuity basis make housing under 213 possible at lower monthly carrying charges. These charges now are based on actual cost of operation, without any provision for landlord's profit or risk. Co-op housing is available to any group of 12 or more qualified persons who band together to provide housing for permanent occupancy of members of the group. They may construct individual homes which will become individually owned by the members at the completion of the project, or participate in cooperative ownership and operation of an apartment structure.

Title I — the new regulations on Title I home improvement loan operations also seek to prevent recurrence of recent abuses. Most important new features: lenders are required to take a 10 per cent participating risk along with FHA's 90 (formerly 100) per cent; all dealers must be approved by lenders on uniform blanks distributed by FHA; owners will no longer be able to pyramid loans beyond the \$2500 maximum allowed for a single loan; and criteria governing improvements eligible for loans have been set up.

Proceeds of a loan must finance "alterations, repairs and improvements . . . which substantially protect or improve the basic livability or utility of the property." The regulations specifically list as ineligible for Title I loans: barbecue pits, bathhouses, burglar alarms, burglar protection bars, door opening and closing devices, dumbwaiters, fire alarms or fire detecting devices, fire extinguishers, flower boxes, grading and landscaping, greenhouses, hangars (airplane), kennels, lawn sprinkling systems, outdoor fireplaces or hearths, penthouses, photo murals, radiator covers or enclosures, stands, steam cleaning of exterior surfaces, swimming pools, television antennae, tennis courts, tree surgery, valance or cornice boards, venetian blinds

Architectural and engineering services are allowed.

About that Backlog -

Fee appraisers engaged in private business will be used "as a temporary measure to improve FHA service" till the mounting backlog of home buyers' applications for mortgage insurance has been erased. Commissioner Mason announced the move last month.

(More news on page 322)

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Send us the specs. for your next job. We are confident you will find our prices right. And we'll be glad to refer you to any number of architects and contractors who have found Michaels a thoroughly reliable source of supply.

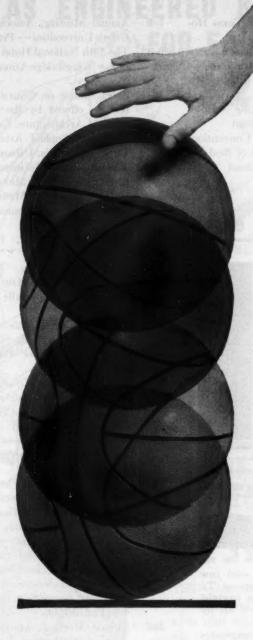
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ON THE CALENDAR

November.

- 1-3 National Motel Show: exhibition of items used in the construction and maintenance of motels Morrison Hotel, Chicago
- 1-5 National Fall Meeting, American Welding Society — Sherman Hotel, Chicago
- 3-5 Annual Convention, Texas So-

- ciety of Architects Texas Hotel, Fort Worth, Tex.
- 3-6 Annual Meeting, American Council of Commercial Laboratories —
 Roosevelt Hotel, New Orleans
- 6-10 Annual Convention, Structural Clay Products Institute — Hotel de Coronado, San Diego
- 6-11 The 47th Annual Convention, National Association of Real Estate Boards — Cleveland
- 7-8 Annual Meeting, Association of Urban Universities — Pittsburgh
- 8-12 The 39th National Hotel Exposition — Kingsbridge Armory, New York City
- 10-12 Short Course on Church Architecture, offered by the Department of Architecture, College of Fine and Applied Arts University of Illinois, Urbana, Ill.
- 10-12 The 18th National Time and Motion Study and Management Clinic, Industrial Management Society Hotel Sherman, Chicago
- 13-14 Great Lakes A.I.A. Regional Meeting
- 15-16 Annual Convention, National Building Material Distributors Association — La Salle Hotel, Chicago
- 15-16 Fifth National Conference on Standards, American Standards Association — Hotel Roosevelt, New York City
- 18-20 Conference on air conditioning and commercial refrigeration sponsored by the Air-Conditioning and Refrigeration Institute with the coöperation of Refrigeration Service Engineers Society — Minneapolis
- 18-20 Annual Convention, Florida Association of Architects La Coquille Hotel, Palm Beach, Fla.
- 21-23 National Convention, Scarab Architectural Fraternity — School of Architecture and the Arts, Alabama Polytechnic Institute
- 28ff Annual Convention, American Municipal Association; until Dec. 1 — Philadelphia
- 28ff Annual Meeting, American Society of Mechanical Engineers; until Dec. 3 — New York
- 29ff First International Automation
 Exposition: exhibit on automatic
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December_

2-7 The 21st National Exposition of Power and Mechanical Engineering, sponsored by the American Society of Mechanical Engineers — Commercial Museum, Philadelphia

(Continued on page 324)



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1955

January.

1955 Good Design Exhibition, newest edition of the continuing

exhibition sponsored by the Museum of Modern Art, New York, and the Merchandise Mart, Chicago; throughout the year - The Merchandise Mart, Chicago

- 7-11 First National Retail Industry Show, sponsored by the Store Modernization Institute - Madison Square Garden, New York
- 16-20 The 11th Annual Convention, National Association of Home Builders - Conrad Hilton and Sherman Hotels, Chicago
- 24-27 The 61st Annual Meeting, American Society of Heating and Ventilating Engineers - Benjamin Franklin and Bellevue-Stratford Hotels, Philadelphia
- 24-28 International Heating and Ventilating Exposition, sponsored by the American Society of Heating and Ventilating Engineers -Commercial Museum and Convention Hall, Philadelphia
- 24-27 Sixth Plant Maintenance and Engineering Show - International Amphitheatre, Chicago
- 26-28 Annual Meeting, Society of Industrial Realtors - Shamrock Hotel, Houston
- Winter General Meeting, American Institute of Electrical Engineers - Statler Hotel, New York City



Setting Genuine Clay Tile on floors and walls of the Roosevelt Hotel, New Orleans, with the Miracle Thin-Set Method. Can be installed in hotel bathroom without losing even one night's revenue. No heavy construction equipment or bulky setting materials needed. New constructions in the Statler Hotels in Hartford, Conn. and Dallas. Tayas are being in ford, Conn. and Dallas, Texas, are being installed by the Miracle Method.



Insulating Ducts. Plaster applied over wire and cork which has been attached to aluminum ducts using Miracle Adhesive and Miracle Spindle Anchors, (Illustration: John Hancock Mutual Life Insurance Co. Building, Boston, Mass. Architect, Cram and Ferguson. Builder, Turner Construction Co.)

Get Substantial Savings in Labor and Material

BY NEW MIRACLE "CONSTRUCTION BY ADHESION"® METHODS IN NEW BUILDINGS AND MODERNIZATION



Insulating Walls and Ceiling by Miracle Surface Anchor Method. Fiberglas insulation, Type PF-613, 2" thick—haded to concert ceiling using Miracle bonded to concrete ceiling using Miracle Pronged Anchors. (Illustration: Radio City Studio 3B, New York, N. Y. Contractor, William J. Scully, Inc., New York, N. Y.)



Installing Floor Runners or Bonding Furring Strips. Wood runners in-stalled on concrete floors with Miracle Adhesive and Miracle Anchor Nails to support 2" solid partitions. (Illustration: Washington Circle Apart-ments, Washington, D.C. General Contractor, Charles H. Tompkins Company.)



FREE: Write today for 20-page brochure describing Miracle 'Thin-Set' method of installing clay tile. 20 full pages of facts and illustrations showing how to install clay tile quickly, permanently at minimum cost. ALSO, send for colorful, informative brochure on Miracle Anchors, which details savings in man hours and costs by use of the Miracle Anchor Method Dent AR

Miracle Adhesives Corporation New York 22, N. Y.

OFFICE NOTES

Offices Opened_

- · John K. Cross, Architect, has announced the opening of his office at 911 Kales Bldg., Detroit 26, Mich. Mr. Cross was formerly with the firm of Mac-Kenzie and Cross, Baltimore, and with Harley, Ellington and Day, Inc., of Detroit.
- · Alfred Greif Jr., A.I.A., has established offices for the practice of architecture and engineering at 5036 Poplar Ave., Memphis, Tenn.
- · Linn Smith, A.I.A., announces the opening of offices at 114 S. Woodward, Birmingham, Mich.
- Allan Wallsworth, A.I.A., has recently returned to practice after a two years absence due to illness. His offices are at 2846 N. Prospect Ave., Milwaukee 11, Wis.
- · Hachiro Yuasa, A.I.A., and Dean Price, Architect, have opened an office at 5369 Broadway, Oakland 16, Calif.

Firm Changes.

· D. W. Budlong Jr. has been appointed Assistant Chief Engineer for the May Engineering Company, Electrical and (Continued on page 326)

HOLOPHANE Develops Scientific Lighting for the LOW CEILING CLASSROOM



LO-BRITE* Concave CONTROLENS* F-1570

Reduced Brightness Increased Efficiency Greatest Visual Comfort

State of the Carlo	VISUAL COMFORT TABLE VCF Values for 200 Watts			
ROOM	ROOM	CEILING HEIGHT		
(in foot)	(in foot)	10'	131	
	20	98%	99%	
	30	98%	98%	
20	40	97%	97%	
	60	97%	97%	
	80	96%	96%	
30	40	97%	97%	
	60	97%	97%	

This table indicates the percentage of normal observers who may be expected to experience visual comfort when seated in the least favorable visual position in the room.

*Reg. U. S. Pat. Off.

The constant demand for economical construction has spurred a wide-spread trend to the one-story, low-ceilinged school . . . The lower ceilings created a new set of problems, which have challenged the foremost lighting experts. Holophane Engineers, after intensive research, presented the solution in the F-1570 Series, now in use by many new schools across the nation.

Through a new optical design, Holophane F-1570 units offer these advantages:

- (a) They take the direct glare out of direct lighting.
- (b) They provide the most effective lighting of the kind needed by teachers and pupils — maximum visibility with highest comfort.
- (c) They cost less because they serve longer at lower operating expense.

HOLOPHANE COMPANY, INC.

Lighting Authorities Since 1898 - 342 MADISON AVENUE, NEW YORK 17 N. Y.

Mechanical Consulting Engineers. The firm is located in North Hollywood, Cal.

- Joseph G. Carchidi, Architect, has been admitted as a partner into the firm of Kramer & Hirsch, to be known henceforward as Kramer, Hirsch & Carchidi, Architects. The firm's address is 115 W. State St., Trenton, N. J.
- · Lefebvre-Wiggins & Associates, Archi-

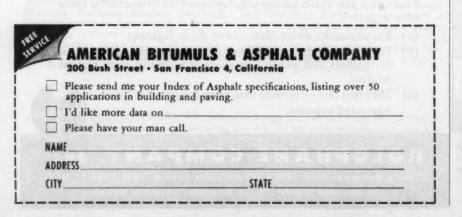
tects and Engineers, have opened new offices at 3882 North Teutonia Ave., Milwaukee 6, Wis. The firm was formerly known as Gregory G. Lefebvre & Donald C. Wiggins.

- Swaim & Allen, Architects, have announced the association of John C. Wellborn, A.I.A., with the firm. They are located at 331 Gazette Building, Little Rock, Ark.
- Ward Thomas, Architect, recently announced that M. H. L. Sanders Jr. has joined his office as an associate. New offices have been opened at 133 Kearny St., San Francisco, Calif.
- George Roberg Thompson, formerly city engineer for Detroit, has been appointed to the executive staff of Giffels & Vallet, Inc., L. Rossetti, of 1000 Marquette Bldg., Detroit 26, Mich.



YOU CAN HAVE the specialized experience of a field force of over 80 men in key geographical locations, and a complete library of laboratory and proved field data. We have facts on every phase of asphalt and BITUMULS® asphaltic emulsion work for building and paving.





New Addresses_

Edward D. Dart, Architect, Room 936, 201 N. Wells St., Chicago 6, Ill.

James S. De Rose, Architect, 290 E. Sixth St., Clifton, N. J.

Thomas R. Fahey, A.I.A., 4760 Stuart St., Denver 12, Colo.

Victor Galbraith, Architect, 702 E. Oak St., Stockton, Calif.

Donnell Jaeckle, Architect, N. First and Jackson Streets, San Jose, Calif.

Lester J. A. Julienelle, A.I.A., 241 Orange St., New Haven, Conn.

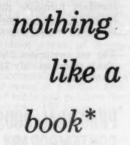
H. Vernon Lee, Architect, 1160 Southland Rd., Sylvan Shores, Mount Dora, Fla.

(More news on page 332)

ADDENDA

Through a typographical error the advertisement of the Powers Regulator Company on pages 40 and 41 of the September issue of Architectural Record failed to credit the following in connection with the Hinsdale, Ill., Sanitarium and Hospital — Architect and Engineers: Fugard, Burt, Wilkinson and Orth; Edward G. Halstead; General Contractors: E. H. Marhoefer Jr. Co.; Contractors: Thomas J. Douglass & Co. (Heating); Charles E. Gazin (Plumbing); Plumbing Fixtures: American-Standard; all of Chicago, Ill.

Since publication of the Fromkin house in its March 1954 issue (page 199), Architectural Record has been informed by Harvey L. Koizim, Attorney, of Norwalk, Conn., that the contractors for the residence were David Hall Faile and Company, Westport, Conn.



in the building field

On the following pages you'll find a Christmas list of books for your friends and associates with a stake





A TREASURY OF CONTEMPORARY HOUSES

by the Editors of Architectural Record

Here are 50 architect-designed contemporary houses that have been just recently completed. Selected from plans of thousands of new homes, the houses within these pages are the experts' choice, de-signed by some of the world's leading architects, the ultimate in modern living.

There is nothing sketchy about this book. Most of the houses are depicted in 10 or more photographs, illustrations and plans. Over 600 superb illustrations accompany a pertinent, lucid text by the editors of the world's leading architectural magazine. The story behind each house is presented simply in its essentials with no frills and no involved technical language.

A Treasury of Contemporary Houses has been hailed as the perfect answer to recent critics of contemporary house design. Homeowners and homelovers everywhere will find this new book a stimulating source of ideas for decoration and remodeling, and prospective homeowners would do well to invest in a copy before investing much more in a house. 218 pages, $8\frac{3}{4} \times 11\frac{5}{6}$, Illustrated, \$5.95

TIME-SAVER STANDARDS

3rd Edition 1954

The new edition of this authoritative reference has now been completely revised and brought up-to-date.

Since 1946 Time-Saver Standards has served as a working partner to thousands of architects, engineers, designers, builders, and other technicians in the construction field. Users consider this book the one indispensable reference to any and every question of building principle, practice, and procedure. Small houses and towering skyscrapers have been built with its help. As a daily working tool on construction projects of every size, description, and dollar value, Time-Saver Standards has saved endless hours of research time, immeasurable extra work, and

many costly mistakes, as well as millions of dollars on construction costs. 888 pages, Illustrated, 9 x 12, \$12.50

TOWARD BETTER SCHOOL DESIGN

by WILLIAM W. CAUDILL

This new book, written by America's fore-most school architect and planning consultant, is a brilliant contribution to common sense and clear thinking in a field of paramount importance to every citizen: school planning and building.

Building costs, the big stumbling-block in nearly all school projects, are thoroughly analyzed from the foundation up. Granting that good schools cost money, the author shows why they often cost too much money. There's a fortune in sound ideas to be found here, among them: How to establish strict cost controls; how to save on the building shell; what plan-forms cost the least, and why; how to double-up on spaces; why "cheap" materials are often more expensive in the long run; how to cut expense by using large structural units and modern assembly-line construction methods; where to eliminate expensive waste space; in these and many other ways, Mr. Caudill tells where and how to economize.

To demonstrate how these methods work out in practice, the book includes many case-studies of successful schools designed by Mr. Caudill and others. Each study states the problem involved, how the right approach was used, and what solution was decided upon. All told, this book promises to be the standard reference work of school planning for years to come. 312 pages, 8 \(^4\) x 11 \(^5\)_8, Illustrated, \(^12.75\)

HOW TO BUILD MODERN FURNITURE

by MARIO dal FABBRO

Vol 1: Practical construction methods Vol. II: DESIGNS AND ASSEMBLY

With more than 1500 diagrams, well over 100 photographs,

these two books cover every phases of furniture design and construction, from selection of the wood to application of the finish. Text is brief and clear; illustrations do most of the teaching. Each step is pictured in graphic detail, exactly as performed by expert cabinetmakers. Chairs, tables, magazine racks, cabinets, desks, bookshelves, beds, and sofas - all these and many more can be built quickly and easily, at a great saving over their retail cost. Special features include complete sections on care and use of tools standard furniture measurements - upholstery work - and photographs of pleasing room arrangements.

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The set comprises 250 pages, 81/2 x 11, and is priced at only \$9.50. Either volume alone, \$6.00

PRACTICAL HOUSES FOR CONTEMPORARY LIVING

by JEAN and DON GRAF

Displayed in this new book are forty houses with "built-in personalities" houses that reflect their owners' tastes and living habits like a mirror reflects an image. Selected from all regions of the U. S., they represent many prevailing styles of architecture, and all price ranges from \$7500 up.

There are six categories of dwellings to satisfy virtually all shelter requirements: Houses for One Person; Houses for Small Families; Houses on Limited Plots; Houses on Irregular Sites; and Houses Unlimited (the best that money can buy). Complete plans accompany each set of photos. 194 pages, 81/2 x 113/8, \$6.95

82 DISTINCTIVE HOUSES

selected from Architectural Record

This album of houses is a splendid gift item for any architect, designer, builder and present or prospective homeowner.

On display here are 82 of the finest houses published in Architectural Record in the past few years. Each house is depicted in superb interior and exterior photographs which dramatize its design and convey its individuality.

Created by such craftsmen as Pietro Belluschi, John H. Callender, and Paul Thiry, these 82 houses represent a wide range of localities, living habits, personal tastes, and sites. Along with the photographs are complete floor plans, site plans, drawings of structural elements, and design details. Comprising the last 100 pages are Time-Saver Standards for Houses, taken from recent issues of the Record.

> 82 Distinctive Houses exhibits contemporary home design at its finest in masterworks of America's most gifted architects. 437 pages, 81/2 1 113/8, \$8.00

Good books make the best

ARCHITECTURAL PHOTOGRAPHY OF HOUSES

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by ROBERT C. CLEVELAND

Lavishly illustrated with some 350 vivid photographs of fine houses, in both contemporary and traditional styles, this book reveals the expert craft of the architectural photographer.

Each photograph carries two captions, one giving important design information, the other revealing the photographic technique employed. Special features include a "portfolio of rooms" which presents splendid interior views of living sents spiendid interior views of living rooms, bedrooms, dining rooms, play-rooms, etc.; a study of the photographic methods which successfully capture the central theme and mood of a house; and an entire section of hints and pointers for the amateur cameraman. 160 pages, some 350 photographs, $8\frac{3}{4} \times 11\frac{1}{2}$, \$7.50

LANDSCAPE FOR LIVING

by GARRETT ECKBO

Planned with insight and written with craftsmanship, this volume examines the purposes, problems, and practices of landscape design, and recommends spe-cific ways to achieve both beauty and utility in layout of lawns, shrubbery, trees, and gardens.

Mr. Eckbo imparts a sound understanding of landscape design by tracing its history, and outlining proven principles of symmetrical layout of grounds. Entire sections are devoted to materials, plants and planting, site conditions, structural factors, gardens, public buildings, and group housing. Included are many photographs, renderings, and diagrams of fine landscaping. 288 pages, 8 x 10 34, \$10.00 landscaping. 288 pages, 8 x 103/4, \$10.00

MARCEL BREUER: ARCHITECT and DESIGNER

by PETER BLAKE

This masterful biography of Marcel Breuer captures the essence and spirit of one of the most gifted and influential architects of our time. It is a book that will strike a responsive chord in the heart of every architect and designer—one that will instruct, charm and inspire you, and one you will be proud to display on your library shelf. 196 photographs and drawings, 128 pages, 8½ x 10¾, \$4.00

PLANNING AND BUILDING THE MODERN CHURCH

by WILLIAM WARD WATKIN

Here, at long last, is a major work upon a long neglected phase of American culture, church architecture. Planning and building the modern church, as presented in this book, is a co-operative venture among architecture. architect, clergy and laymen of the church committee, each of whom contributes a special viewpoint and skill.

Chapter by chapter, Mr. Watkin examines each step in the project: selecting the architect, locating the best site, choice of basic design, deciding upon materials;

interior of pews and aisles, design of the nave, fenestration, lighting, heating, acoustics, furnishings and statuary— every question which must be considered. He also discusses factors of external environment, such as the type of neighborhood, proximity to public transport, parking areas, landscaping, and all other problems which affect the church and its congregation. 166 pages, 9 x 12, \$8.50

MOTELS, HOTELS, **RESTAURANTS and BARS**

by the Editors of Architectural Record

Here is a carefully chosen presentation of the best material published in Architec-tural Record on these building types. Emphasis is on current design trends, techniques and structural features. Within each category, buildings of many sizes, styles, and localities are included. Some of Statler Center in Los Angeles, Hilton Hotel in Istanbul, bar and restaurant of the Hotel McAlpin in New York, and Henrici's Restaurant in Chicago. Each of the buildings and projects is profusely illustrated with photographs, plans and renderings. 215 pages, $8\frac{3}{4} \times 11\frac{5}{8}$, \$6.95

PLANNING STORES THAT PAY

by DR. LOUIS PARNES, A.I.A.

In this book Dr. Parnes demonstrates the amazing degree to which architecture—as expressed in counter design, layout of aisles, traffic flow, etc.—speeds and increases retail sales in department stores and specialty or chain stores. Point by point he conducts a tour of the store to illustrate the right and wrong aspects of profit realing design. profit-making design.

With more than 500 illustrations, this book explores each detail of the store and its equipment — entrances, arcades, show windows, furniture and fixtures, shipping and receiving services, departmental and floor layouts, display counters and cabinets, lighting — all the hundreds of features that help to sell merchandise.

This book is not only a guide to planning new stores, but also for remodelling older ones. 456 pages, 9 x 12, \$10.00

INDUSTRIAL BUILDINGS DESIGN DATA BOOK

All of the famed Building Type Studies on Industrial Buildings published by Architectural Record over a ten-year period including the extremely active war and post-war years — are reprinted in this immense 546-page volume.

More than 1100 illustrations highlight these 116 professional studies of Ameri-ca's finest manufacturing and processing plants, research centers, and laboratories. Everything from small machine shops to huge plants like Detroit's Willow Run is analyzed in this great compendium of plans, procedures, and job practice that represents the skill and experience of hundreds of architects and engineers.

Every conceivable problem is set forth in detail, and its solution fully explained: Steel Framing; Thermal Expansion; Foundation Design;

Heating, Ventilating and Sanitary Systems; Color Plans, etc. 546 pages, 8¾ x 11, \$9.00

SCHOOLS FOR THE **VERY YOUNG**

by H. H. WAECHTER and E. WAECHTER

In the literature of school planning, scant attention has been paid to the pre-school
— that unique building which, as a combined school and nursery, can best promote the proper training of the very
young and impressionable child.

Thus Schools for the Very Young is the first definitive study of a building type that assumes more importance with each passing year. Opening with a brief history, this book describes the pre-school in action, noting events of a typical day. Full attention is given to classroom layout and facilities, space arrangements, indoor and outdoor play areas, and the various types of lighting, heating and ventilating systems called for by the special functions of these pre-elementary schools.

The authors also discuss the place and purpose of the pre-school in its community, and cite examples of schools designed to meet particular sets of environmental conditions. 208 pages, $7\frac{3}{8} \times 10$,

PLANNING ELEMENTARY SCHOOL BUILDINGS

by N. L. ENGELHARDT, Sr., N. L. ENGELHARDT, Jr., and STANTON LEGGETT

Written by three widely-known school planning consultants, this book is an au-thoritative and up-to-date guide for archi-tects, school officials, school board members, and others responsible for building or remodeling schools.

Planning Elementary School Buildings is an exhaustive study of all phases of an intricate subject. The author tells how to survey the specific needs of a community, then takes up financing plans, cost esti-mating, site selection, basic design, choice of materials, classroom layout and equipment, the auditorium, the school library, the cafeteria, outdoor and indoor play areas, offices, and other major require-ments. He also analyzes improved meth-ods of heating, ventilating, and lighting the school, and discusses communications equipment, safety measures, sanitary fa-cilities, and the like.

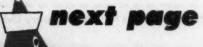
Some 250 photographs and drawings supplement the text; check-lists of essential equipment are included to simplify planning and purchasing. 820 pages, 834 x 1158, \$12.50

DESIGN FOR MODERN MERCHANDISING

by the Editors of Architectural Record

Here for the first time in one volume is a detailed study of the physical design of selling establish-ments of all types. You will find

Use convenient order form on



stores for soft goods and hard goods, food stores, department stores, wholesale showrooms, and that offspring of a booming suburban market, the shopping center.

Over 600 photographs, plans and diagrams take the reader through a vivid selection of successful selling establishments where good design has paid off in flourishing traffic and comfortable, satisfied customers. Anyone about to undertake new construction or renovation of a merchandising building will find this volume an endless, fascinating source of useful ideas.

Design for Modern Merchandising is valuable for owners, managers and department heads of selling establishments. It is also an important book for architects, designers, builders and investors interested in the buildings that help to sell the nation's merchandise. 254 pages, 834 x 1158, Illustrated, \$8.95

DESIGN AND CONSTRUCTION OF GENERAL HOSPITALS

by the U. S. Public Health Service

A collaborative publishing effort of

A collaborative publishing effort of Architectural Record and The Modern Hospital

For the past ten years, leading authorities on hospital design, working with the U. S. Public Health Service, Architectural Record, and The Modern Hospital, have examined, interpreted, and reported farreaching improvements in hospital design, equipment and facilities. This book presents the fruits of their effort — a vast fund of planning information never before available in one place.

It presents prototypes of successful hospital design, complete with 30 master plans for hospitals of every size. Each

plan is accurately scaled, fully detailed, and visualized in skillful rendering. Illustrations of floor plans, site plans, and a variety of charts and tabular data help to provide step-by-step guidance in planning the general hospital. 206 pages, 8½ x 11, Illustrated, \$12.00

COMMERCIAL BUILDINGS

selected from Architectural Record

Traditional styles of commercial buildings, with their costly but useless adornments, have largely given way to the simpler, less expensive structural forms of contemporary design. Accompanying this great change has been the appearance of entirely new types of buildings — TV studios, airport control centers, and others — needed to keep pace with new inventions, modes of travel, and social habits.

This new book is a vivid pictorial record of this revolution in design as exemplified by scores of the best buildings erected during the past seven years. First published in Architectural Record, these projects clearly demonstrate the new design themes, the novel materials and structural methods, which have won wide acceptance in recent years. Each project is shown in a series of photographs, floor plans, structural features, and major details of design. 400 pages, $8\frac{1}{2}x$ 11, Illustrated, \$9.75

NORTHWEST ARCHITECTURE OF PIETRO BELLUSCHI

Edited by JO STUBBLEBINE

Collected here for the first time in book form is the work of Pietro Belluschi, a major exponent of the contemporary style,

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and a man who has made an historic contribution to American architecture.

Through this pictorial study of his work, which includes houses, churches, and commercial buildings of several types, the reader can fully grasp the extent of Mr. Belluschi's talent and the versatility of his art. These photographs of his work bear witness to the man's integrity, his intuitive sense of the tasteful and appropriate, his rare ability to express in wood, stone, and metal the rugged character of the Pacific Northwest and the admirable individualism of its people. 112 pages, 8 x 10½, Illustrated, \$6.50

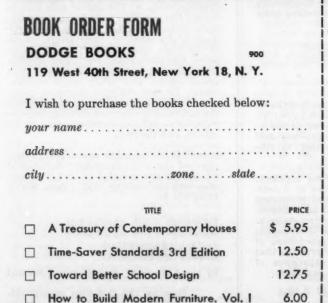
SCHOOL PLANNING DATA BOOK

Compiled by Architectural Record

School Planning is a reprint of material published in Architectural Record chronicling the remarkable advances in school design achieved during the past ten years.

School buildings of every type and size, from all parts of the United States, are displayed here — with plans and construction details shown exactly as the architects developed them to suit the climatic conditions and educational needs of the particular locality. These casestudies represent the best schools built in recent years, and provide an exhaustive study of trends and techniques in every major phase of school planning and building.

These studies present widely differing new methods for the design of multipurpose rooms and corridors; classroom shapes; modular design; bilateral and artificial lighting; and a host of other key subjects. 456 pages, 8¾ x 11 ½, over 1000 illustrations, \$8.00



How to Build Modern Furniture. Vol. II

How to Build Modern Furniture (2 Volume set)
Practical Houses for Contemporary Living

	CONTRACTOR DESIGNATION	
	TITLE	PRICE
	82 Distinctive Houses	\$ 8.00
	Architectural Photography of Houses	7.50
	Landscape for Living	10.00
	Marcel Breuer: Architect & Designer	4.00
	Planning & Building the Modern Church	8.50
	Motels, Hotels, Restaurants & Bars	6.95
	Planning Stores that Pay	10.00
	Industrial Buildings Design Data Book	9.00
	Schools for the Very Young	6.50
	Planning Elementary School Buildings	12.50
	Design for Modern Merchandising	8.95
	Design & Construction of General Hospitals	12.00
	Commercial Buildings	9.75
	Northwest Architecture of Pietro Belluschi	6.50
]	School Planning Data Book	8.00

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Sheathing
+ Insulation
+ Ceiling Finish

TIM DECK
the complete roof decking for fine modern construction

For sheer beauty, no other ceiling finish can compare with Tim-Deck and its natural wood patterns. And along with its incomparable beauty you get this combination—all with one quick application:

Dimensionally stable roof sheathing. Finished ceiling.

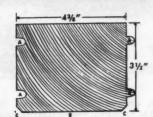
Insulation properties superior to 1-inch wood sheathing plus 1-inch wood fibre insulating board.

Wider spacing of supporting members—
13-foot spacing for total load of 60 pounds and 16-foot spacing for 40-pound total load.

Effective resistance to destruction by fire —has the slow-burning qualities of heavy timber.

Tim-Deck is normally milled from Western Red cedar. Also available in other species when desired.

You'll want to use this beautiful labor-saving decking in your new homes and commercial buildings. For details see your nearest Timber Structures representative, or fill-in and mail the coupon.



- A. Double tongue-and-grooves are precision cut at the sides for close fit.
- B. Bottom surface is selected and planed for interior exposure.
- C. Corners on under side are beveled for V-joint. Decking may also be beaded, grooved or striated for special decorative or acoustical effects.

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THE RECORD REPORTS

(Continued from page 324)

MUSEUM GARDEN IS SITE FOR A JAPANESE HOUSE

The Japanese "House in the Garden" was a summer hit at New York's Museum of Modern Art. The house, based on 16th and 17th century designs, was built in Japan, shipped to this country and reassembled in the museum's garden under the supervision of architect Junzo Yoshimura.



Styles –

CASTELL #9000

Drawing Pencil in its conventional cedar wood case.

PUSH BUTTON LOCKTITE

the lead holder with the bull dog grip, and imported CASTELL #9030 Lead.

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Some people

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CASTELL

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like sedans-



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Thousands of engineers, designers and draftsmen like wood cased Castell 9000 Drawing Pencil—many other thousands are partial to our bulldog grip push-button LOCKTITE Holder and imported CASTELL 9030 Refill Lead.

> But whichever style you prefer, the CASTELL lead is the same—absolutely identical in all 20 degrees, 8B to 10H.

> This is the famous CASTELL lead which has left its imprint on much of the world's material progress for the past decades.

You can take your choice . . . either CASTELL wood pencil which generations of professionals regard as their old standby-or push button LOCKTITE, the balanced beauty that never smears your fingers.

> Whichever you use, you are giving yourself the advantage of the world's best, the standard of quality-the beacon for all other pencils to follow.

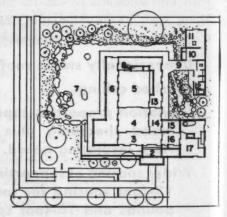
Order CASTELL from your dealer today.

Such a house might have been built for a scholar, priest or government official; the shoin, or built-in desk, is an essential part of the design. The lack of visible furniture is explained by the Japanese custom of storing beds and tables when not using them.

The particular relevance of Japanese building to Western architecture was noted in a statement by Arthur Drexler, the museum's Curator of Architecture and Design; he mentioned the post and lintel frame construction, flexible room arrangements, close relation of indoor and outdoor areas and ornamental quality of the structural system.

The exhibit was sponsored by the America-Japan Society in Tokyo, private citizens here and in Japan, and the museum.

(Continued on page 334)



0 6 12 18 24 30 36 FT.

(1) Garden entrance (2) Genkan (family entrance) (3) Gallery (4) Second room (5) Shoin room (main room with shoin or desk) (6) Veranda (7) Garden (8) Side Veranda (9) Bridge to teahouse (10) Mizuya (tea house pantry) (11) Chashitsu (tea ceremony room) (12) Bath (13) Storage room (14) Gallery (15) Service veranda (16) Pantry (17)

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A good example of the pleasing effect of spaciousness achieved with American-Standard plumbing fixtures installed and supported by the Zurn System is shown in the large picture above. This is one of the modern rest rooms in the new Lever Brothers plant in Los Angeles, designed and constructed by the Bechtel Corporation.

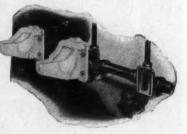
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ABOVE: American-Standard Glenco toilets installed with Zurn Systems relieve the wall of all the load.

BELOW: Wall-type model of the famous Sanistand fixture—the American-Standard urinal for women. It is installed with a Zurn System fitting especially designed for this fixture.





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THE RECORD REPORTS

(Continued from page 332)

Right: the veranda overlooks the garden, designed by the architect and Tansai Sano in the sansui style, which represents the Buddhist image of Paradise. Far right: view through second room into main room. Below: shoin room; shoin (desk) at back under shoji; the tokonoma, at right, is an alcove traditionally used in Japan for display of art objects — painting done in black ink by Kaii Higashiyama

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Above: chashitsu (tea ceremony room); as this ceremony is devoted to the contemplation and appreciation of art, this room also contains a tokonoma



At traditional ridge-pole raising ceremony, a Buddhist priest offers thanks on completion of heavy construction and prays that the house "shall be enclosed in eternal peace"

(More news on page 336)



hydroment was specified and used in the classrooms, corridors and service areas of this new school.

The NEW FATHER JUDGE HIGH SCHOOL in PHILADELPHIA, PA., is an outstanding tribute to the combined abilities of the architects, the general contractor and the R. C. Archdiocese.

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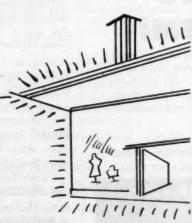


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PRODUCERS' COUNCIL HAS ANNUAL FALL CONVENTION

The Producers' Council held its 33rd annual fall convention this September in New York City. The theme for this year's meeting was "Better Service for a Better Building Market."

Ben John Small, A.I.A., represented the architects on a panel titled "A Critical Appraisal of Selling Methods Employed by Building Material Producers." Mr. Small entered a plea for more information and less "sales pressure" in product literature and advertising directed to the architect. He suggested as standards those used by the jury of the Building Product Literature Competition sponsored by the American Institute of Architects and the Producers'

Council: "attention-arresting quality, format, and informative or educational value to the architects."

Air Conditioning and Design

Possible effects of air conditioning on building design were outlined by Edwin A. Scott Jr., associate editor of the magazine Air Conditioning. One such change, he said, will be the disappearance of porches and patios as indoor living becomes more comfortable. Predicting the replacement of window units by central air conditioning systems, Mr. Scott said that more breezeways and attics would be built to accommodate these systems, which require large quantities of fresh air to operate. Mr. Scott also forecast a "merchandising duel" between manufacturers of air conditioning and of glass because of the effort to make air conditioning more economical by cutting down on glass areas; the victory, according to Mr. Scott, will go to the side with the best selling program.

In a luncheon address reviewing the economic and management picture for the construction industry, Joseph D. Ardleigh, executive vice president of The Research Institute of America, Inc., said that current good business conditions should continue into 1955, although isolated areas of hardship could be expected. He reported a "fair but healthy fall upturn" in business. Mr. Ardleigh also told the producers that their business should be "spurred" by the new national housing act and by the new tax depreciation ruling.

The convention concluded with a oneday workshop for chapter presidents.

New Officers Elected

Members chose William Gillett as their president-elect, to step into the office on January 1, 1955. Mr. Gillett is vice-president and a director of Detroit Steel Products Company. He will succeed Elliot C. Spratt of St. Joseph, Mo., in the office, while Mr. Spratt becomes a 10-year director of the council.

Other officers elected were: Fred Hauserman, Cleveland — first vice president; H. Dorn Stewart, Lancaster, Pa.— second vice president; Ted Wakfield, Vermilion, Ohio — secretary; and Fritz Close, Pittsburgh — treasurer. These men will also enter office on January 1.

Douglas Whitlock, of the Structural Clay Products Institute, Washington, D. C., was elected to honorary membership on the council's board.

The 1955 fall meeting is scheduled to take place in early October in Detroit.

(More news on page 338)



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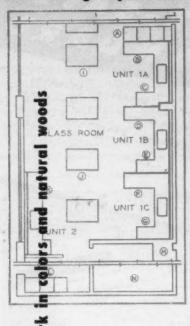
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THE RECORD REPORTS

(Continued from page 336)



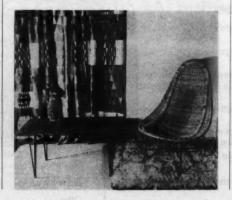
"DESIGN IN SCANDINAVIA" EXHIBIT TOURING NATION

An inter-Scandinavian committee selected more than 700 objects to tour the United States and Canada in an exhibit "Design in Scandinavia." Each of the four countries is represented by work in furniture, metal, ceramics, glass and textiles.

The installation was designed, by Danish architect Erik Herløw, to double as packing cases for the exhibit. Mr. Herløw used anodized aluminum for the tables and showcases, and a laminated plastic for the panels. The panels are colored white, gray, black and red. The display units are built on a one-ft module for flexibility of arrangement.

The exhibit, which is being circulated by the American Federation of Arts, has already been seen in Richmond, Baltimore, Brooklyn, Manchester, (Continued on page 342)

Representing Sweden: rattan chair by Kerstin-Hörlin-Holmquist; textile by architect Sven Markelius; teak and wrought iron table by Nils Strinning; double-woven linen rug by Astrid Sampe



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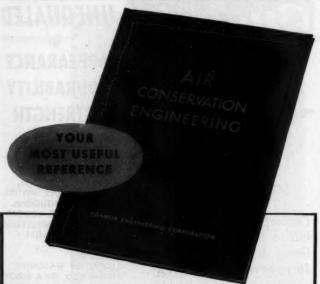
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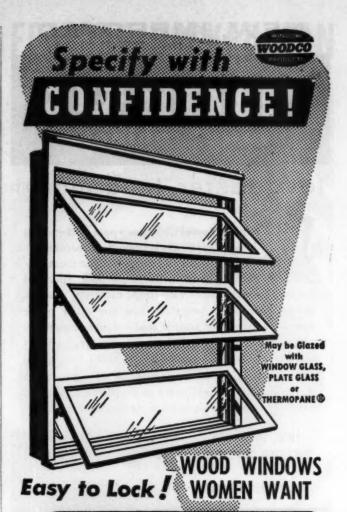
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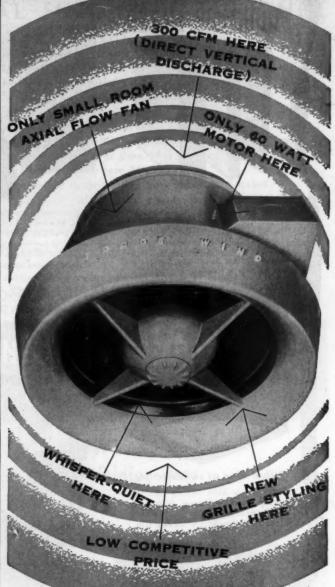


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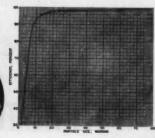
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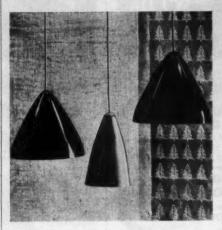
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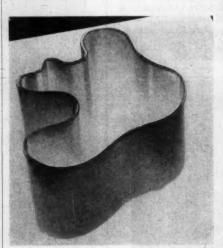
THE RECORD REPORTS

(Continued from page 338)



Metal lamps are the work of Lisa Johansson-Pape, Finnish designer

N. H., and Cleveland; it is scheduled to be in Toronto this month. In 1955 it will reach Ottawa, Pittsburgh, Toledo, Detroit, Minneapolis, Omaha and Kansas City, Mo.



Free-form glass bowl, a Finnish entry, was designed by Alvar Aalto



Architect Finn Juhl, of Denmark, was the designer of this armchair

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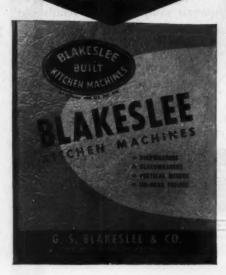
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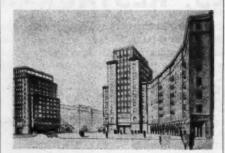
(Continued from page 11)

Almost all of the building effort in the Eastern Sector has been devoted to the mammoth Stalinallee project. Beginning with the 13-story tower apartments on the Strausbergerplatz, the street continues eastward and is lined with eightand nine-story apartments; the development contains about 10,000 dwelling units. The ground floors of these buildings are usually occupied by state stores. Says Mr. Hekker: "No matter how much effort has been bestowed upon the architecture (stone flights of steps, rich entry porticos, gray or cream colored fascia tiles . . .) the whole is of such oppressing superhuman scale, of such monotonous deadly décor that after half an hour's walk one is spiritually exhausted.'

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Aside from Stalinallee, very few new buildings have gone up in East Berlin. These include a new railway station (which Mr. Hekker dismisses as "insignificant"); the Thalmann subway station, similar to the monumental marble subway in Moscow; and a large Russian memorial.

Considerable work has been done toward the reconstruction of old land-(Continued on page 350)



Above: tower apartments on Strausberger Platz, the beginning of Stalinallee; project by Professor Henselmann. Below: library at Blücher Platz, West Berlin; Jobst Kreuer, Bornemann and Wille, architects



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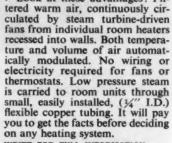


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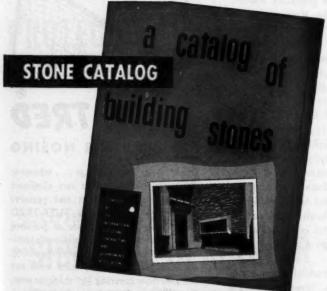
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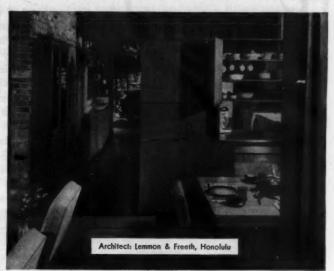
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POSTWAR BERLIN

(Continued from page 346)

marks. This sort of work, says Mr. Hekker, has been done with a great deal more care and success in the East than in West Germany.

In the West

The problem of reconstructing West Berlin has been complicated by its isolated position; its housing problem has been aggravated by a constant stream of refugees. In addition, the construction of large projects was made difficult by inadequate provisions for government acquisition of land. In 1953, however, machinery was set up to simplify this.

In contrast to the Eastern Zone, Mr. Hekker reports, all energy has not been expended on one large project. In addition to a number of multiple-dwelling developments, work has also been done on the repair and rebuilding of small homes. Other projects have included commercial buildings, college buildings, post offices, youth centers and homes for the aged.

The esthetic orientation of the Western architect, in Mr. Hekker's judgment, retains some traditional and Third Reich features, but is generally toward the resumption of the Bauhaus style, with a few side glances toward Sweden and Switzerland.

The difference between the East and West Zones, remarks Mr. Hekker, is particularly noticeable in the evening. "In the East," he says, "is an almost extinct and darkened city, without any display of individuality such as automobiles, neon signs or lighted window displays. In the West there is an all-embracing gaiety, stirring music, neon signs, luxurious shops and bars to no end. Although one knows that the basis for all this is not altogether healthy, one cannot avoid noticing the vital energy of a city which a few years ago was but a Pompeii."

The somewhat sorrowful summary of the report suggests, however, that a distinctive architecture is not emerging in either the East or the West. The author pessimistically concludes: "Are these marble underground stations and classical dams on the one hand, and steel and glass crates of the five-cent bazaars on the other, the symbols of a new spirit? We stand with empty hands in front of a people which wants to see the culture of its land expressed in buildings—and building ordinances and welfare control are of no help"



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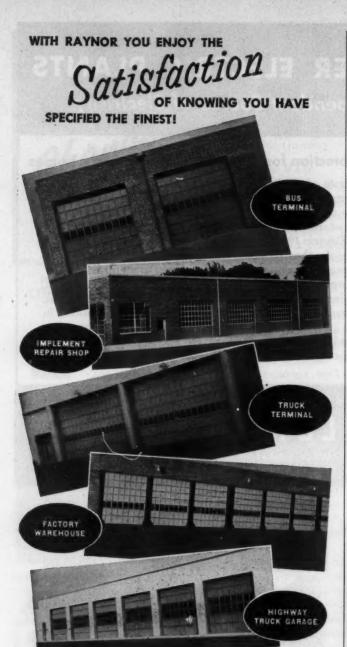


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REQUIRED READING

(Continued from page 48)

climate, the author describes the influences of the sun, temperature, wind, precipitation, lightning and humidity on architecture, the beneficial and disadvantageous effects of these elements under given conditions, and their control through proper planning and the use of such devices as trees, windbreaks, brisesoleil and snow fences. Practical answers are offered to such questions as how to pick a site, how to provide a dry basement and a dry area around the house, how to insure comfort on hot summer nights, and how to plant the best trees for comfort, protection and beauty.

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The World's Great Bridges. By H. Shirley Smith. Harper & Brothers (New York, N. Y.) 1954. 53/4 in. by 91/4 in., 180 pp, illus., \$3.50

Mr. Shirley Smith is a leading British bridge builder. In this short history he relates the story of man's achievements in bridge building from the Roman, Persian, and Chinese Empires through the Renaissance era, to the birth of modern masonry and suspension bridges.

The book is interesting and informative on a subject not often written about, but one could certainly wish for more and better photographs.

A NEW REFERENCE BOOK

A Biographical Dictionary of English Architects 1660-1840. By H. M. Colvin. Harvard University Press (Cambridge, Mass.) 1954. 6 in. by 9 in., 821 pp, \$12.50

This book contains, in alphabetical order, biographies of over one thousand English architects and master-builders who worked in the seventeenth, eighteenth and nineteenth centuries, together with fully-documented lists of their works and an introductory essay on the building trades and the architectural profession in this period of Stuart and Georgian architecture.

This is a valuable reference book and it is to be hoped that similar biographical dictionaries will be published for other significant periods.

Manual of Precast Concrete Construction. By F. Thomas Collins (921 W. Las Tunas Blvd., San Gabriel, Calif.) 1954. 3rd ed. 8½ in. by 11 in., 102 pp, illus.

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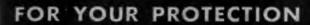
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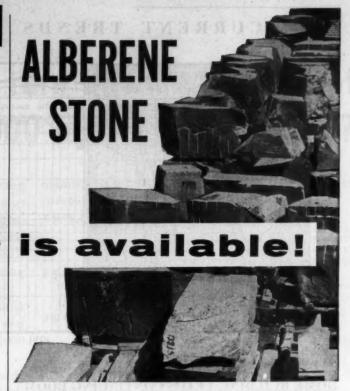


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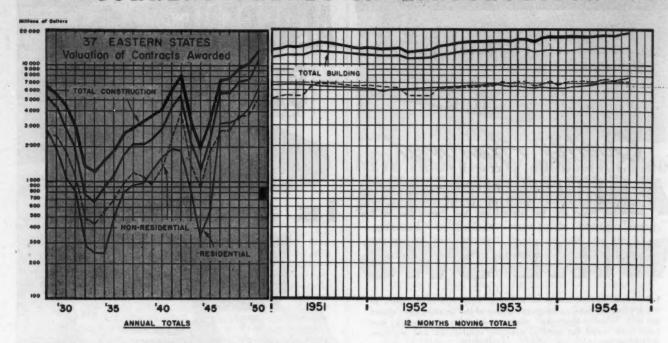
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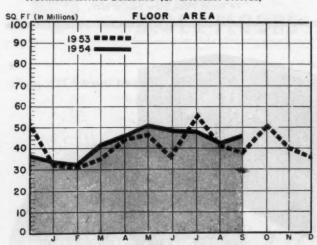
HOME BUILDING LEADS CONTINUING BOOM

WITH THREE MONTHS STILL TO GO, 1954 construction had gained more than a full month over last year, at the 1953 monthly rate; and a new annual record seemed assured. A whopping 53 per cent increase in residential construction in September over the 1953 month carried the September 1954 total to an all-time high for the month; F. W. Dodge Corporation figures on contracts for future construction in the 37 eastern states also showed a record nine-months total of \$14,477,181,000, 13 per cent ahead of the previous nine-months high in 1953. For the nine-months period, increases were registered in each of the three basic categories - nonresidential up four per cent, residential up 26 per cent and heavy engineering up five per cent. In the nonresidential category the gains were reflected in six of the eight Dodge classifications - commercial, educational and science, hospital and institutional, public, religious, and social and recreational. Manufacturing and the "miscellaneous nonresidential" classifications showed declines. The September total of \$1,816,232,000 was four per cent over September 1953.

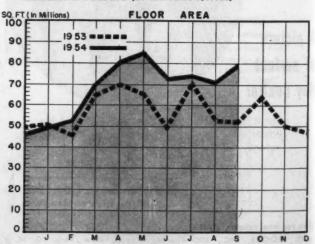
SCHOOLS AND COLLEGE BUILDINGS*-SELECTED YEARS F. W. Dodge Corporation Contracts Awarded (37 Eastern States) Valuation (Millions of Dollars) Monthly Monthly Annual Annual Total Total Year Average Year Average 1929 330.5 27.5 1950 1076.6 89.7 1935 150.2 12.5 1951 1184.4 98.7 1943 48.1 4.0 1952 1305.7 108.8 1947 316.4 26.3 1953 1556.6 129.7 **Monthly Totals** 1953 1954 92.0 155.8 125.4 190.5 91.1 127.9 133.4 Feb. Feb. 164.7 Aug. Mar. 118.2 127.9 173.3 Sept. 163.1 Mar. 133.8 138.1 Oct. 156.6 Apr. Apr. May 152.6 Nov. 112.8 May 172.2 9-mos.-total 139.5 175.0 -1454.2 June Dec. 166.7 June * Scho pols are the subject of Building Types Study No. 216, pp. 177-216.

Charts by Dodge Statistical Research Service

NONRESIDENTIAL BUILDING (37 EASTERN STATES)



RESIDENTIAL BUILDING (37 EASTERN STATES)



would you turn down a savings of 54,000 on a 540,000 lighting expenditure?

You can enjoy the benefits of the finest lighting money can buy and effect really substantial savings at the same time, simply by buying the right lighting fixture. Time and again, the better design and efficiency of Smithcraft Fluorescent Fixtures result in fewer units to produce recommended lighting levels.

Here's an actual case history of how a Pennsylvania department store saved 10% in initial costs and 10% in operating costs . . . or approximately \$4000 on a ten-year \$40,000 expenditure.

Before re-lighting, a complete survey was made and exact lighting requirements were established. To meet these requirements, Smithcraft units and units of several nationally-known top quality

manufacturers were subjected to an exhaustive comparative analysis. Here are the results:

10% FEWER UNITS REQUIRED

Number of units required to achieve recommended lighting levels: Smithcraft - 270

2nd Best Fixture — 297
3rd Best Fixture — 339
LESS INSTALLATION COST

Proportionately less labor and materials were required to install the 270 Smithcraft units than the 297 units of

the nearest competitor.
FEWER LAMPS 10%

(Initial & Replacement)

2nd Best Fixture — 776
3rd Best Fixture — 914 Lamps required:

Recommended practice is to replace lamps every 18 months—a continuing 10% savings.

LESS POWER CONSUMPTION

Required wattage:......Smithcraft: 51.3 kilowatts 2nd Best Fixture: 56.3 kilowatts 3rd Best Fixture: 64.8 kilowatts

Whether you're lighting a store, office, school, factory, or institution, it pays to buy lighting - not fixtures. Invest in Smithcraft -

PHOTOGRAPH SHOWS AN INTERESTING PATTERN ARRANGEMENT OF THE SMITHCRAFT LOUVERLITE SLIMLINE IN THE PENNA. DEPT. STORE DESCRIBED ABOVE.

America's Finest Fluorescent Lighting Equipment.



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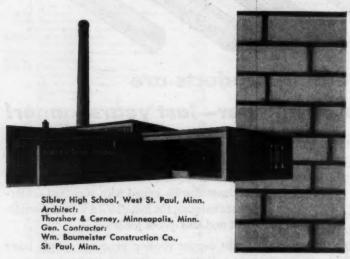
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